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THE
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Rail-Road News.

New Style of Railway Car.

Herapath's Journal furnishes the following description of a car of the kind used by the Great Northern Railway Company in England. If the material used, "teak-wood," has the qualities here imputed to it, for resisting the weather and can be kept polished and in good repair for a cost so much less than the painted carriage, it would be well for our car manufacturers to turn their attention to it. A saving likewise of some two hundred dollars on the first cost per car, is worthy of being taken into consideration:—

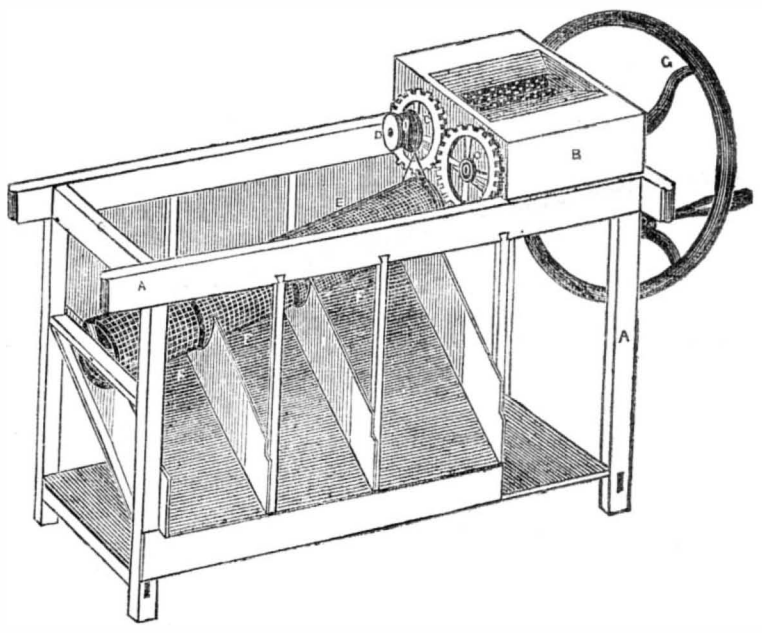
The carriages are most peculiar in their appearance. At first sight a stranger would hardly know what to make of them, whether they were in a perfectly finished state or not. But on a little closer inspection he would soon discover his mistake. They are made of an Indian wood called "teak." It is not painted, but well polished and varnished, so that the naturally fine grain of the wood is its ornament. The carriages, therefore, present very much the appearance of finely polished oak, instead of being handsomely and expensively painted. The advantages of this "peculiarity" are many, and it will be seen not unimportant. In the first place the "teak" wood is harder, stronger, more durable, and less susceptible to the expansions and contractions of heat and cold, and being also an oily wood, more impervious to wet than railway carriages made of the ordinary material. The next advantage is that when an injury, in the nature of a scratch or a chip, takes place, it can readily and at little expense be repaired. With the ordinary carriages there is often much expense incurred by having to repaint the whole carriage to repair a scratch. When the paint of one part becomes injured the whole must be painted. The "teak" carriages of course require nothing of the kind. There is no paint to spoil. A scratch is readily polished out, and a little varnish put over that part renders it like the rest. The last advantage of the use of the "teak" which we need name is that it costs—in the first or capital charge, something like £40 a carriage less. That is a saving of some amount. The merit of the introduction of this material for railway carriages is due to Mr. Williams, of Goswell street, the principal carriage builder for the Company. The carriages are very commodious—they afford more convenience and comfort than we generally find in railway carriages. They are higher—a man of six feet can stand up in them. There is a good ventilation at the top, without producing draft, an improvement of some importance to invalid travellers. Instead of pulling up the windows by means of bands, as in other carriages, they slide up and down at the touch of the finger, arising from the sash of the windows being nicely balanced by weights.

Cotton Trade of the City of Glasgow.

The first steam engine was erected in 1792; in 1793 the first power-looms were introduced from England, and in 1794, 40 looms were set up at a place called Milton; in 1831 there were 15,137 power-looms in the city, and at the present moment, 1850, there are 25,000, which average 625,000 yards of cloth per day.

There are 1,800,000 spindles running, and the cotton consumed amounts to 45,000,000 lbs., or 120,000 bales.

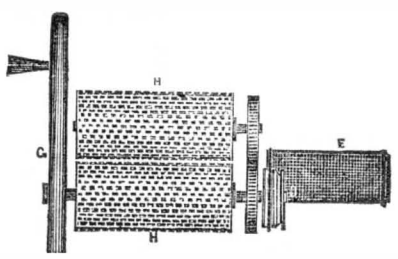
BATTIN'S COAL BREAKER.---Fig. 1.



We here present three views of what is termed "Battin's Coal Breaker." This is the machine which has caused no small amount of litigation in Pennsylvania, and is one about which no small amount of difficulty is experienced. The views which we here present are taken from a model, and we have had the patent during the past week to examine, and to give our opinion about its legality, both by those who believe it to be invalid and those who believe it to be good. Upon such considerations—those of both sides—we will endeavor to give an impartial opinion.

Figure 1 is a perspective view, figure 2 is a plan view, and fig. 3 an end view of the breaking rollers. The same letters refer to like parts. A is a frame constructed in any common way; B is the coal box, or hopper; C C are the cog wheels of the breaking rollers. The axle or shaft of one breaking roller, is the main driver, which, by the cog wheel, gives motion to the other roller; D is a large grooved pulley, from which a band, O, proceeds around a pulley on the screen, E, to rotate the said screen on its bearings, F F F, and screen the broken coal; H H are the breaking rollers—

Fig. 2.



they are formed with projections on their surfaces; these projections are of a tapering square form, and are cast or made on the circumference of the rollers with spaces between them, like the checks on a chess board; G is the fly or driving wheel, it drives the main axis, which gives motion to the whole machinery. A spout from below the rollers conveys the broken coal to the screen. The screen is placed like a set of bolters in a grist mill, and is operated in substantially the same manner.

The claim for this invention "is the arrangement of the teeth on the two rollers, substantially as herein described, so that in their rotation the teeth of one shall come opposite the spaces between the teeth of the other, with sufficient space between to hold lumps of the required size, the rollers being so combined by gearing as to make them rotate in opposite directions and with the required velocities, to retain the relative position of the teeth of the two rollers, as described."

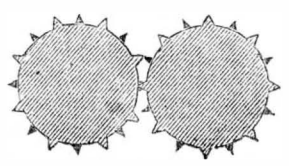
The first patent was granted unto Mr. Battin in October, 1843, then an additional improvement was patented in January, 1844. Afterwards these letters patent were surrendered, and a re-issue granted on the 4th of last September, 1849. The improvement was surrendered, but not re-issued, it was cancelled.

The claim of the first patent was—"the manner in which I have arranged and combined with each other the breaking rollers and the screen, the respective parts being formed and operated substantially as described." The improvement claim which has been cancelled was, "the addition of a smaller roller placed above the other two."

We have now given the three claims of Mr. Battin. The Pottsville Mining Journal of the 31st August contained the following article:

"The Coal-breaker suit is to come on again in October. Mr. Battin, finding his patent untenable, surrendered it and took out a new one entirely. Upon this new one he now brings suit against three firms in Tamaqua. Our Colliers should know the nature of the present claim, in order to guide their defence. He had three patents before, claiming the

Fig. 3.



combination of breaking rollers and revolving screens; but disclaiming the invention of toothed rollers, which he acknowledged to have been long in use for breaking up similar substances.

Now, his specification makes claim not to the combination, but to toothed rollers so arranged as to revolve in opposite directions with the teeth of one playing in the open spaces between the teeth of the other! This is in fact exactly what his *third* patent claimed before and could not maintain: except that he now omits the acknowledgment therein made of the antiquity of toothed rollers for breaking other frangible substances. We have only to say, that if a pair of rollers is intended to pass any thing through them, they must *necessarily* revolve in opposite directions; and if revolving vertically they are designed to break up any substance into lumps, it is equally a mechanical necessity that the teeth of one shall work into the interstices between the teeth of the other; else there would be no breaking up, for three-fourths of the lumps would pass through the ample continuous channels, untouched by the breaking points. There never was a pair of rollers fluted or pointed (the principle being the same in both) that could have been set or worked otherwise. And we conceive that the issuing of letters patent for the alleged novelty of so clear a mechanical necessity, is a disgrace to the patent office and a proof of either gross neglect or shameful incompetency.

We ask the opinion of our highly competent friends of the "Scientific American." And we would remind them that every body was willing to pay Mr. Battin handsomely, patent or no patent, and that they only resisted his claims because of exhorbitancy and the taxiform and inquisitorial shape he persisted in giving to his collections."

The patent which we have examined, of last year, does not speak of any more than two previous ones: if there is a fourth we have not seen it. The Register is perfectly correct about the action of the rollers—they could not work otherwise and perform the same work; but then the question hinges on this point—"Could the teeth be arranged otherwise and perform as well?" Of course the revolving in opposite directions, and the equal motion of the two rollers, is all old and used in all crushing rollers, but that is not the point; it is the arrangement of the teeth in combination with the roller motion. For example—if the teeth of one met the teeth of the other, and acted like breaking scissor levers, then it could not be Mr. Battin's arrangement or invention; and if one roller had one half the teeth of the other, but revolved twice as fast, it could not be Mr. Battin's arrangement nor invention. Now the questions to be asked are these, and they are the test questions of every patent: "Is Mr. Battin the original inventor? were rollers such as he claims, employed two years before he made application for a patent? and, are they useful?"

We have had a good long search to discover whether the said rollers were in any mechanical work in our possession,—we could not find them. Having seen a great deal of machinery in our life, there is an impression on our mind that we have seen the like before, but where, and for what purpose, (although we think it was for breaking bones before grinding into dust,) we cannot positively say. We must give it as *our* opinion, then, that the claim is legal. To prove the legality of the claim, the question is one of fact, and there may be witnesses who have seen such rollers used before 1843; if so, the patent will be void,—if not, it will be sustained. If the only difficulty in Mr. Battin's way has been his too exhorbitant demands, we advise him to be moderate in this respect, it is the most profitable way in the end. His first patent claim, however, was a very poor one: it was tantamount to saying: "the rollers are old, and the screen is old, but they never were combined before," whereas the same combination is very old—that is, belt and pulley.

Balloon Snow Storm.

On Saturday afternoon before last, Joshua Pusey ascended with a balloon from Reading, Pennsylvania. He started at half-past four o'clock, and descended at Haddington, a few miles west of the Schuylkill river, about half-past seven. He says that during his voyage, and when at an altitude of two miles, he was overtaken in a snow storm, and, what was strange to him, and will be so to every body, was the fact that the snow flakes ascended.

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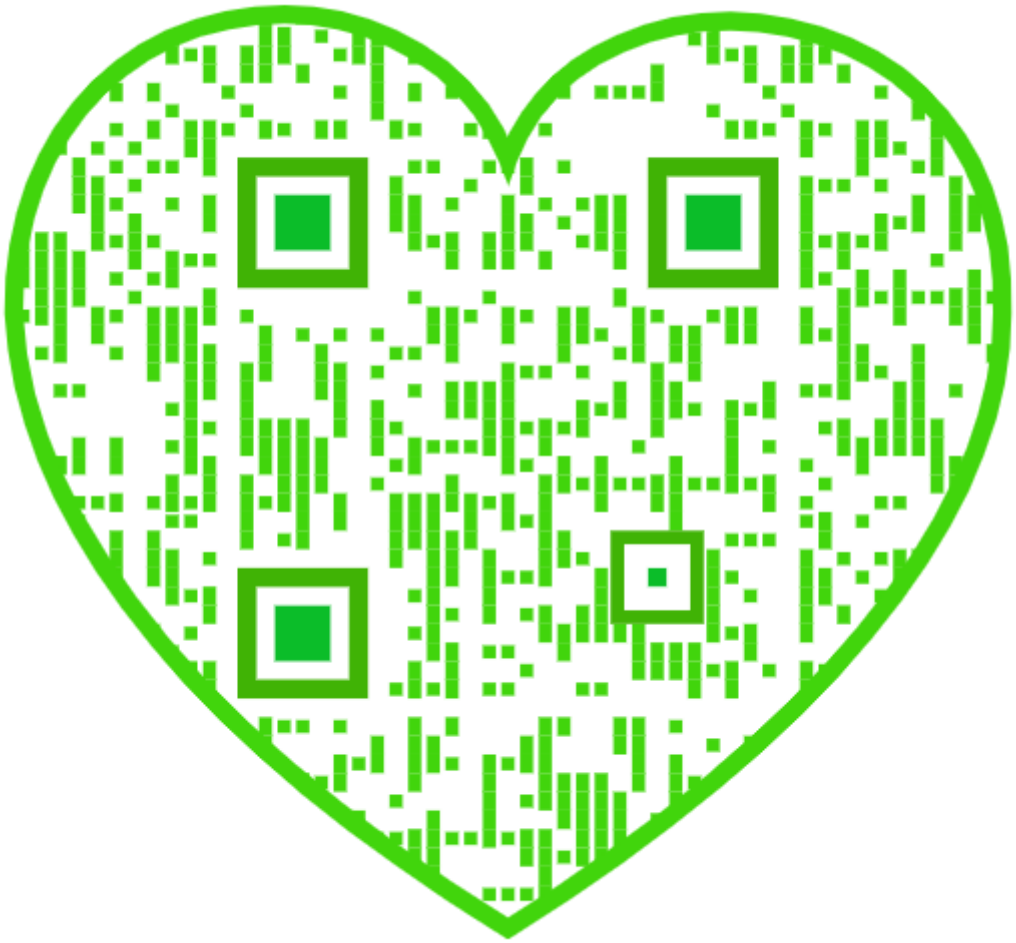

Miscellaneous.

British Association for the Advancement of Science.

WELDING IRON.

Mr. Nasmyth explained his improvements in forging iron. In forging shafts for the paddle wheels of steamers, for example, it was of most essential importance that the shaft should be sound from the surface to the centre. The common plan by which the section was alternately elongated in different directions, could not effect this object. It did, in fact, effectually cripple or disintegrate the central parts of the shaft, just as by heating a rod of wood would separate the central fibres and thereby weaken it. To prevent this elongation Mr. Nasmyth forged his shafts in a hollow wedge, thereby giving rise to three forces converging upon the centre, and thus securing a complete consolidation of the metal. Mr. Nasmyth then explained his method of welding, showing that a weld was in general so much weaker than the other parts, because of the weld being made from the extremities toward the centre, thus enclosing within it all those omdated and disintegrated portions which, in fact, kept the solid forces of the metal from coming in contact. He proposed that one of the surfaces to be welded together should be slightly convex, that the welding should begin at the centre when the surfaces were in contact, and proceed outwards, thus squeezing out those loose portions, and allowing the two surfaces to come in complete contact with one another. Several members having expressed their high opinion of these excellent improvements,—Dr. Robinson said they bore upon them the impress of mechanical genius, addressing themselves, as all such things did at once, to the understanding and approbation of all, and each wondering that they were not found out before.

[Mr. Nasmyth is the inventor of the celebrated steam hammer.]

PROPELLING VESSELS.

Mr. Ruthven, of New street, Edinburgh, read a paper on improvements in propelling steam vessels The President, Dr. Robinson, in communicating the thanks of the section to Mr. Ruthven, requested that his model might be left in the room till the close of the day, for the inspection of those who desire to satisfy themselves as to the construction and working of the engines. A very important fact was mentioned by Mr. Ruthven, as operating in his hydro-propulsion—namely, that supposing the vessel to be progressing with ten horse power, immediately on being checked, which in the case of necessity can be instantaneously done, totally irrespective of the engine, there is a double or 20 horse power communicated to check and give the vessel a retrograde motion, incalculably valuable in many cases, which gradually decreases as it is answered by the vessel, until it again obtains the 10 horse power.

(Mr. Ruthven has patented his invention in America.]

A FUSED DIAMOND.

J. P. Gassiot, Esq., F. R. S., the well known electrician, read a paper on a peculiar form produced in a diamond under the influence of the voltaic arc. He showed to the section a diamond which had been exposed to the intense heat produced by the voltaic battery when ranged as in the device for the electric light. The diamond had been fused, but instead of changing to coke, as in such circumstances diamonds generally do, it had become a glassy mass, and seemed to consist of a multitude of small crystals adhering together. Mr. Gassiot produced the fused diamond, which, from its peculiar appearance, produced much amusement.

ATLANTIC WAVES.

The Rev. Dr. Scoresby read a most interesting paper on "Atlantic waves—their magnitude, velocity and phenomena." These observations were made on board the steamer Cambria, in March, 1848, on her passage between Liverpool and New York. The advantages of a steamer over a sailing vessel for such observations were great. The latter was acted on so as to roll before the wind, so that her position was not level in the trough of the sea. In a large steamer the paddle-boxes tend to bring back the ship to a level, when rolling, so that in the Cambria he was quite sure that a perfect level was maintained for several seconds. He had three places of observations—1st, the ordinary deck; 2d, the top of the saloon or cuddy; and, 3d, the paddle-boxes. The height of the saloon or cuddy was 23¼ feet above the line of flotation of the ship in calm water, and the height of the observer's eye on the paddle boxes, above the same line, was 30¼. His observations were made in lat. 51 deg. N. long.; 38 deg. 50 min. W., and the wind W. S. W. Most of the waves were above 24 feet, and at least one half were up to the level of 30 feet above the trough of the sea. After it had blown hard for 36 hours, and after the storm had subsided a little, he still saw 10 waves more than 26 feet above the trough. His mode of measuring, depending upon the distance of the waves, and the angle of elevation, could be quite depended upon. He also noted the periods taken by the waves in overtaking the ship, having reckoned 20 waves to have passed in 5½ minutes. The average of several was 16½ seconds. He also found that the time of a regular wave passing from stem to stern of the ship (220 feet long) was 6 seconds. The height of the highest crest was 45 feet from the trough, and the distance of two crests (that is, the length of a wave) was 600 feet. The form and character of secondary waves are modified by the inequality of the power producing the wave, viz., the action of the wind, for neither the direction nor velocity of the wind ever remain the same. Thus the inequalities are produced, especially in elevation. During the height of the gale the forms of the waves were less regular than after a little subsidence. His observations referred entirely to waves in deep water, not to those on shores or in shallow waters, and he found that the average velocity was rather above 32 miles an hour. In regard to this paper, the Marquis of Northampton took occasion to remark on the importance of the Association, from its bringing together philosophers either to correct or corroborate one another. The latter was the effect in this instance, for he found by a paper on the same subject, communicated to the Association in 1845 by Mr. S. Russel, that that gentlemen had calculated the velocity of the waves to be between 30 and 31 miles an hour.

TELESCOPES.

Mr. Nasmyth (inventor of the Steam Hammer,) read a paper "On a new arrangement of the Reflecting Telescope, by which great additional comfort and convenience are afforded to the observer." He first explained four figures or diagrams, exhibiting the construction of the Newtonian, the Gregorian, and the Cassegranian telescopes, and in one of which he (Mr. Nasmyth) has combined the Newtonian and Cassegranian. The Nasmyth telescope reflects the rays from the smaller mirror, which is convex, upon a diagonal mirror, placed near the larger speculum, by which they are sent off through the trunnion. The telescope is mounted on triangular supports, and on one side is placed a chair for the observer, the whole being fixed to a turn table, and so constructed that it can be turned in any direction by the observer without removing his eye from the glass. Such a degree of steadiness is thus attained, that the observer can have a star or other object in view for a whole hour. The telescope can in a few seconds be changed into a Newtonian by removing the diagonal mirror, and placing it at the trunnion. The method of mounting removes the inconveniences attached to that used by Newton, Herschel, and others. Mr. Nasmith exhibited a drawing of a portion of the lunar surface as lately seen by him with his telescope, presenting appearances like the craters of volcanoes, surrounded by terraces similar to those observed on our own planet. Mr. Nasmyth protects the speculum by screwing on a disc of zinc, so as to render the whole air tight and water tight.

Prof. Robinson was then heard "On a new form of Equatorial at present constructing for the Edinburgh Observatory," a model of which he exhibited and explained to the section. The polar axis of his method has the form of a shell or mortar. The hole through the centre of it is the declination axis. The right ascension circle surrounds the shell longitudinally. The telescope is mounted in the middle of the polar axis. The declination circle is formed by the circle or rim of the shell, the observations being read off through apertures in the frame of the telescope. The whole is kept in constant motion by means of clockwork, by which the telescope, when directed towards a star, keeps it constant and steady in view.

COOLING ROOMS.

Professor Smyth was then heard "On a Mode of Cooling the Air of Rooms in Tropical Climates," which he illustrated by means of a drawing. The result is effected by means of a double-acting forcing pump worked by mechanical power.

Mr. Taylor mentioned a large copper-mine in Cornwall, which men worked at a temperature of 90 deg. or 100 deg. or upwards, and stated his belief that the apparatus described by Professor Smyth might be applied.

Dr. Robinson thought that the principle might be applied also to atmospheric railways, in the case of one of which, near Dublin, the temperature produced in the engine house by compression of the atmosphere, is 130 deg. or 140 deg.

Mr. Rankin gave the result of his calculations regarding the amount of mechanical power necessary for working the apparatus of Professor Smyth. One-horse power for one hour would be sufficient to lower the temperature of 9,000 cubic feet of atmospheric air, to the extent of 20 degrees Fahrenheit.

ROMAN MOSAIC PAVEMENTS.

A paper from Profs. Buckland and Voelcker, was read, about the "Singular Changes which have occurred in the very beautiful Mosaic or Roman Tesselated pavement, discovered a year ago at Cirencester." From their account, it appeared that the Romans were in the custom of preparing a beautiful ruby glass, which they colored with the red oxide of copper exactly as is done in the finest cathedral window glasses of the present day. They were, however, unacquainted with the application of gold to produce a ruby red. It is worth the attention of those interested in staining glass windows, which are now so popular, to notice that the ruby red copper glasses are liable to become green after long exposure to the atmosphere. In the Cirencester pavement a head of Flora occurs, with a wreath of green leaves, and in addition with green flowers. All the other colors harmonised most beautifully, but the green flowers destroyed the effects of the Mosaic. Professor Voelcker, however, discovered that the flowers had been originally red, and had only become green, in consequence of the red oxide of copper being changed by the action of the air exerted on it during centuries, into the green carbonate, better known to our readers as verdigris.

FLUORINE IN MILK.

Dr. George Wilson then made a communication, stating that he had established incontestibly the presence of the remarkable element of fluorine in blood and milk. In the case of blood, twenty-six imperial pints of that from the ox were employed. The liquid was boiled down and burnt to ashes by a process which occupied a month, and thereafter being washed with hot water to remove the common salt, which is largely present in all blood, was moistened with oil of vitriol, and gave off, when so treated, hydro-fluoric acid, which can be made to etch glass. In illustration of this paper, pieces of glass were shown to the section, deeply etched by the acid vapor evolved from the ashes of blood, and also from the ashes of milk and cheese.

Dr. Anderson next communicated the results of a very elaborate research on the combination of codeine, one of the crystallisable substances contained in opium, and showed the section crystals of a very beautiful compound which this body forms with iodine.

A communication by Professor Mulder, the celebrated chemist of Holland, was devoted to show that carbonic acid occurs in blood in a peculiar state of combination which has not hitherto been observed.

NATURAL HISTORY.—PRIMITIVE RACES IN SCOTLAND.

The communication next laid before the section by Mr. Daniel Wilson, was entitled an "Inquiry into the Evidence of the Existence of Primitive Races in Scotland, prior to the Celtæ." He showed, by a series of results established on carefully sifted data, that evidence may be produced to prove the existence of two primitive races in Scotland, differing decidedly in cranial characteristics from the Celtæ, but also differing remarkably from the two earliest races of Scandinavia, the primitive race of the north of Europe, apparently corresponding to the second race of the Scottish Tumuli. An interesting collection of crania was exhibited from various Scottish cairns and barrows, and a large diagram was shown in illustration of their measurements and relative capacities. The communication excited much interest, and led to an animated discussion on various points referred to, in which the author was acknowledged to have opened up an entirely new field of inquiry, in relation to primitive Scottish Ethnology.

NEW ZEALANDERS.

Two papers were then read, the first from the Rev. J. F. H. Wahler, a missionary in New Zealand, being remarks upon the present state of the natives of that island; and the other from Dr. Thomas Hodgkin, upon the religious rites and the assumed practice of cannibalism amongst the New Zealanders, or the natives of the Southern Islands. There was no authentic case of the human body having been eaten, though it was true that it had been consumed by fire. At the same time, many narratives broadly stated that the practice existed. Mr. Black, when strictly interrogated by the late Sir John Barrow on the subject, admitted that he never saw a single instance of the eating of the human flesh, though he was present on several occasions when bodies were roasted. No doubt European vices had been introduced amongst this class of people, and in consequence their habits had deteriorated. Hence any instances of cannibalism were rather acts of vice in the parties than the result of continued practice.

A gentleman in the body of the section stated that he had accounts from Swansea, in Australia, of a race of natives hitherto undescribed, who were undoubtedly guilty of cannibalism. It was not practised from enmity or revenge; in the case of relations it was done as a mark of respect to the individual. He had no doubt that the Teutonic race would ultimately supplant the original people of the country; that in fact from all accounts they could not be improved in their habits, and that consequently they were unfit for civilization.

Mr. Graham, from Australia, confirmed this statement, relating an anecdote of a girl who was taken charge of by the Governor of South Australia, and after all the tuition that could be given her, returned after a few years to her savage habits. He also stated with regard to the natives of Australia, that it was impossible to keep them to work for any length of time.

ARTIFICIAL PRODUCTION OF LIMBS.

Dr. Simpson then read a paper on the re-production of limbs after amputation in the human subject, with several curious specimens. Dr. Simpson showed that the power of re-producing and repairing lost parts was the greatest in the lowest classes of animals, and decreased as we ascended higher and higher the scale of animal life. He further pointed out that the human embryo approached in this as in other respects the physiological life and powers of the lower animals, and consequently when the arm or leg was amputated verily in embryonic existence, as not unfrequently happened from bands of coagulable lymph, and the results of disease, the stump structures reproduced a small rudimentary hand—as the crab or lizard does. He showed various casts and drawings of cases of hands thus reproduced; and two living examples were exhibited to the Association.

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For the Scientific American.

The Voltaic Battery.

NUMBER III.

We have already seen what it required to form a battery in general; we will now inspect the different kinds of batteries, and examine their different parts and attend somewhat to the chemical operations going on in the instrument. By this course we may arrive at a clear conception of what it is that makes the difference between the inventions of Grove, Daniell and Smee.

Let us again recur to our primary experiment:—we saw that the battery must contain a compound fluid, one element of which must combine with the zinc. For the sake of illustration we supposed this fluid to be muriatic acid. But this is not the only compound fluid capable of giving up one element to the zinc; water, which consists of oxygen and hydrogen, will readily give up its oxygen to the zinc; but if we use water to excite the battery, we shall find the action extremely feeble at first, and soon to cease altogether. If we now inspect the zinc we shall find it covered with a hard and insoluble white crust,—hence it is evident what caused the deficient action: the oxide of zinc formed by the oxygen of the water and the zinc, has excluded the water from contact with the zinc, for as it formed on the surface of the zinc it remained there—the oxide of zinc being as insoluble as a flint stone.

But if we can render the oxide of zinc soluble, so as to remove it from the zinc as soon as formed, it is obvious that we may employ water for the battery. Sulphuric acid will combine with oxide of zinc and form sulphate of zinc, which is very soluble; now we will add some sulphuric acid to the battery containing only water, and whose action has ceased, and we see immediately a copious stream of hydrogen bubbles from the silver plate.

It must be borne in mind that it is not the acid that excites the battery, but the water; the acid serving merely to form with the oxide of zinc a soluble substance, which, being dissolved by the water, allows the zinc to be continually in contact with the water, and thus oxide to be continually forming.

Here it is manifest that the water performs two offices; first, to form oxide, and afterwards to dissolve this oxide when combined with sulphuric acid. Now, as a given quantity of water will dissolve only a certain quantity of sulphate of zinc, it will be useless to add more acid than will make sufficient of the sulphate to saturate the water, for if the acid exceeds one-fifth the weight of the water, more sulphate will be made than the water can dissolve, and so the battery action will cease. Practically, the acid should never exceed one-fourth the bulk of the water.

We have now made one change in our experimental battery by substituting, in the place of muriatic acid, water and sulphuric acid—this acid being cheaper than the other, not poisonous, and free from any unpleasant smell.

But the zinc we supposed to be chemically pure, and as such is very expensive; let us try a piece of ordinary zinc in its place: now we see there is constantly a torrent of gas from the zinc, whether the wires are joined or not, and in a short time the zinc is all gone. This shows rather a poor prospect for the use of ordinary zinc. But Mr. Kemp, of England, made the important discovery, that by smearing the zinc with quicksilver it would act precisely like pure zinc, thus suffering no loss except when the battery is in action. To amalgamate a zinc plate, it is only necessary to immerse it for a few moments in dilute acid, and pour a little mercury on it, and spread it over the whole surface with a rag.

Let us now attend to the difference between pure and common zinc:—ordinary zinc is contaminated with about five per cent. of charcoal and iron; if we rub a piece of pure zinc with iron filings or coal dust, and then immerse it in the acid, we find that it behaves precisely as the impure—each particle of zinc giving off a stream of gas; hence it is evident that the iron or coal performs an office to the zinc precisely similar to that of the silver of the battery, only the voltaic influence is not conducted by the wires but confined exclusively to the vicinity of the impurities. This is what is termed "local action;" and it is a great trouble and loss in large electro-metallurgical operations. As the zinc is dissolved away by the proper battery action, the impurities are brought to the surface, and combining with the mercury, deprive the zinc of its protecting influence: local action will then commence and rapidly eat up the zinc plate. In general, one amalgamation will last for the depth of one-tenth of an inch on each side of the plate, and a plate of one fourth of an inch thick will require several times to be amalgamated. But local action may begin at any time, and the prudent operator will amalgamate every day, for much zinc will be thus saved, and in the end no more mercury for the spongy compound formed on the surface of the plate should be saved, and the mercury obtained by distillation. In this way the ultimate cost of amalgamation will not exceed two cents per pound.

In forming our primary battery, it was supposed that we used any convenient silver plate—say a dollar hammered out to extend the surface. Let us now take this rude plate and polish it until it is as bright and smooth as a mirror. On restoring it to the battery we find it no longer performs its office of throwing off the hydrogen, but the gas adheres to it in large bubbles. We now find that taking away the roughness of the plate injured it, and if we again roughen it by well rubbing it with fine sand-paper, we find it to perform even better than at first.

If we look at the sand-papered plate with a magnifying glass, we see the bottom of each scratch smooth; now Mr. Smee, to take the utmost advantage of the roughening principle, after roughening with sand paper, attaches it to the zinc of a battery, and so uses the plate to decompose chloride of platinum; the metal is reduced on the silver in the form of a black powder. If we now look at this platinised plate with the magnifyer, it appears as a bed of points. A plate so prepared will evolve the gas in torrents.

We have now converted our experimental battery into a Smee's battery, and such an instrument, formed of a dollar hammered out and a piece of amalgamated zinc, both suspended in a tumbler of dilute acid, will be as good a battery as we can obtain: a better one cannot be purchased, though bigger ones may be had. Let this be borne in mind, that the mechanical form of the battery does not affect the battery action.

This adhesion of the hydrogen was a great obstacle to the battery action, and the different methods of overcoming it is what constitutes a Smee's, Daniell's or Grove's battery. By our first definition of a battery, it must consist of two bodies capable of eliminating the elements of the fluid the zinc eliminates one element in all three batteries. In the Daniell's battery the second element is eliminated by using sulphate of copper in the place of the silver of our battery; but as the sulphate of copper would commingle with the water and acid necessary for the zinc, it has to be confined in a bag or porous cup, for it is necessary for the second body of the battery to be in contact with the compound fluid. The hydrogen here is not evolved, but enters in combination with the oxygen of the oxide of copper and forms water, while the copper is precipitated on the conductor.

This battery is generally constructed of a leather or other porous cup, containing a cylinder of amalgamated zinc and acid, and the porous cup placed in a copper vessel, filled with a solution of sulphate of copper; crystals of the salt are added from time to time, and being first dissolved, and afterwards decomposed, their metal is precipitated on the copper, which at length becomes so thick as to unfit it for use. There is a great trouble from the blue salt leaking through the porous cup to the zinc, and also from the deposition of copper on the porous cup. But the operator need not trouble himself about these defects, for the battery costs more than one of Smee's of the same size, in the first place, and more than twice as much to maintain its action, and will do only one-fifth of the work.

This battery is called the "constant battery," and "sustaining battery." As the copper is abstracted from the sulphate the acid is set free, and this leaking through the porous cup supplies a small but steady stream of excitant to the zinc, but the amount of action obtainable in this way is very small, but it answers well for the kind of telegraph used in England, and also for some other purposes.

(To be Continued.)

For the Scientific American.

Steam and Water Power.

In compliance with a call in the columns of your journal, for information as to the comparative expense of water and steam power, a writer who signs himself B. A., appeared in the Scientific American of the 24th of last August, with the intention of clearing away all the knotty points of the question, to make the subject as clear and plain as the light of the mid-day sun, and thereby putting the controversy at rest forever. B. A. seems to know, or assumes to know, so much about the subject, that it may possibly be deemed presumptuous in me to question any of his statements, or try to shed any further light on the subject than has flowed from his pen; yet I must beg leave to do so, even at the hazard of being written down an ignoramus.

B. A. commences his statements with, "Steam power in cost is nearly uniform, and except as to location, a trifle in the cost of fuel, is much the same everywhere; but that of water has no fixed value, its cost depends on location and other local advantages." He then gives as "a comparatively extreme case," a water power "within five miles of the tide waters of the Hudson River," with a "natural rock dam," and "estimated constantly at 300 horse power in the driest time that water runs." This water power and natural rock dam, he puts down at a cost of one thousand dollars. B. A. says, "steam power in cost is nearly uniform," &c. Well, the location is something—indeed it is so much that we will agree to erect a steam mill, in an Atlantic city, that shall save all that he gains by his cheap water power, in the expense of transportation alone and heating the mill; and will also engage to furnish steam to run and warm the mill, in some locations I could name, at less cost than he can warm his with, on his cheap water power. He speaks also of the difference of a trifle in the cost of fuel. Well, he puts down coal at $5 per ton, or $6,260 per annum, to generate 300 horse steam power; but there are hundreds of sites for cotton mills in the United States, where both cotton and coal may be had in abundance at the very doors—the cotton at two cents per pound less than he can purchase it for at his cheap water power, and the coal at 60 cents per ton. The saving in the cost of cotton would be more than $30,000 per annum, and, in the cost of coal, above $4,000 more—an aggregate per annum quite as large as the profits he can make at his cheap water power; and this is not "comparatively an extreme case." He is fortunate enough to find a natural rock dam. So possibly might we at Niagara Falls, with as much water as we pleased, free of cost. But B. A. has not told us how much it has cost to erect flumes, race-ways, wheel pits, &c., and to construct foundations for his mill—probably quite as much in proportion to the power used, as the sum of $25,000 set down as the cost of the steam engine of 300 horse power. He also puts down the sum of $6,500 as the cost of water-wheel, bulk-head and race. We should very much like to see all this apparatus for 300 horse-power at that cost. Water-wheels, &c., must grow spontaneously in that country, and be endued with magic powers; they are probably accompaniments to natural rock dams,—nature must have formed that site for a cotton mill, and secured it by patent. The science of mechanics and improvements in mechanical labor, have not yet reached that point of excellence at Lowell and Lawrence. Our friend would do well to repair thither, and give them a few lectures on wheels, bulk-heads and races. Some of the wheels there cost $20,000 apiece, for 150 horse-power, and there are few, it is believed, which have not cost three, four or five times as much as he states, to say nothing of the other matters named.

MANUFACTURER.

Scientific Memoranda.

STAITE'S ELECTRIC LIGHT.

We had thought that Mr. Staite or his "electric light, was dead, but it seems that he is as lively as a kitten, and has been recently illuminating some of the cities of old England. At Sunderland he exhibited his electric light from the Light House,—thousands thronged the quays and piers; and many took trips to sea to witness the effect of the light several miles from the land. The apparatus was erected upon a temporary platform, raised a few feet above the light-house, on the South pier—the galvanic battery being placed in a shed below. We learn by the Sunderland Herald that at ten o'clock exactly the anxious spectators were gratified by the first glimpse of light, which was shown by a parabolic reflector.

At Ryhope, three miles off, a lady was enabled to read a letter which she had never opened; and at Whitburn, two miles distant, in an opposite direction, the Herald was read on the sands by several individuals, when the reflector was in such a position as to cast a beam of light in that direction. The iron bridge which crosses the river Wear, three-quarters of a mile from the pier, was crowded; and indeed, almost everywhere that it was known the light was to be exhibited, parties were eager to obtain a glimps of it. At half-past ten o'clock the commissioners proceeded out to sea, a distance of seven miles, in the Sea Horse steamer, at which distance the pier light was invisible; while the electric light shone clear, bright and effulgent as ever; and a captain might have brought his chart on deck and consulted it with ease.

EXTRAORDINARY SUBSTANCE FOUND IN THE STOMACH OF A HORSE.

A short time since a horse belonging to a Mr. Moates, of Spalding, Eng., died and was opened, when a stone about the size of a man's head, or rather in shape and appearance exactly resembling the wig-block used by barbers, was found in the stomach. It weighed eight pounds, and seemed as a flint-stone, and extremely polished and beautiful. Another stone, of the shape and size of a horse's foot, was found in the stomach. These wonderful formations are produced in the stomach, no doubt much in the same way as stone in the bladder, a nucleus being first formed. The polish would be caused by the motion of the stomach in the course of digestion, or perhaps by the friction of one stone against the other. How any animal could live and work with such productions within its stomach is most astonishing. A very large sum is offered for the productions.

MONTGOMERY PRIZE HAM.

Mr. Nathan White, of Montgomery county, Maryland, gives the following as the recipe by which the prize ham at the late Fair was cured:

"The pork should be perfectly cold before being cut up. The hams should be salted with bloom salt, with a portion of red pepper, and about a gill of molasses to each ham. Let them remain in salt five weeks; then hang them up, and smoke with hickory wood for five or six weeks. About the first of April take them down, and wet them with cold water, and let them be well rubbed with unleached ashes. Let them remain in bulk for several days, and then hang them in the loft again for use."

MAMMOTH CYLINDER.

The largest cylinder in the world was cast on Saturday, the 21st ultimo, at the West Point Foundry, Cold Spring. Its outside diameter is 17 feet and its depth 11 feet; the bore is to be 14 feet diameter. This cylinder is for a rotary engine, the invention of Henry G. Thompson, Esq., of this city, and is intended to work, it is said, with low pressure steam, and expansively at the same time. It is intended for a new steamboat, 340 feet long, to run on the Hudson. We shall see what this rotary will do; if it be like its predecessors, it will be an entire failure.

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New Inventions.

Another Important Discovery.

The Pittsburg Post thus announces another new and important discovery in the manufacture of Iron, made by a young man by the name of Adams, the Assistant Manager of the Brady's Bend Iron Works, in Clarion county, in the manufacture of railroad and merchant bars from Coke metal. "By the old method the rails were made with Charcoal pig, and would crack very much and break with one or two blows. By Adams' process, Iron can be made eight dollars per ton lower, and of a superior quality. The process is not mentioned, but the quality of the iron produced, is spoken of. The writer was shown a rail that had been put to the severest test, by putting it, while hot, into cold water; after which they tried to break it with a sledge hammer weighing 80 pounds. Forty blows were given by six men alternately, and they could not even *crack* it. The Charcoal Iron of the company costs from 18 to 22 dollars per ton; their "Coke Metal" costs only from 9 to 11 dollars per ton. The discovery had caused quite an excitement among the workmen, for they were under the impression that the works would have to suspend on account of the low price of Iron.

We have seen the above in a number of papers: so many discoveries in the manufacture of iron have been reported lately, that we are half inclined to set them down as *reports only*. It is stated that Mr. Renton, of New Jersey, has just discovered an improvement to cheapen the manufacture of iron, and Salter's process, which has been patented, has been set forth as one of great merit—one which reduces the price of manufacture a great deal, and now we have this process of Mr. Adams. By the above extract, if his process means the substitution of coke for that of charcoal, then it is not new, and with what reason it is called "Coke Metal" we cannot divine.

Marine Salinometer.

We were shown a few days since, says the Baltimore Clipper, at the brass foundry of Wm. Peters, Esq., Pratt street, near the Bridge, an apparatus which had recently been invented by Mr. Wm. Sewell, of Portsmouth, Va., called the "Marine Salinometer," designed to indicate at all times the exact degree of saltness in the boilers of sea going steamers. It is well known that sea water contains a certain quantity of salt, in proportion of 1 lb. of salt to 32 or 33 lbs. of water, and that when used to generate steam this salt is left in the boiler, as all the water evaporated is fresh. The salt, if left in the boiler, it is equally well known, would soon work its destruction.—Hence the necessity which exists of blowing out, at intervals, a portion of the partly saturated water from the boilers of steam vessels at sea, or plying on salt water. One of the greatest difficulties with which an engineer on a sea going steamer has to contend with, is that of maintaining the water in his boiler at a uniform density. As water will not hold in solution more than a certain quantity of salt, it is necessary, to prevent its deposit in the boiler in the form of scales, to keep the water at a given degree of saltness, by blowing off a portion of the salt water. In vessels not supplied with Salinometers, or some such indicator, the engineers are compelled to blow off at random—sometimes not enough, and at others too much. In one extreme, the salt accumulates in the boiler to its great injury, and in the other case, a great loss of fuel is caused. To remedy the difficulty, this Salinometer is intended.

[We have seen the above in quite a number of exchanges. There may be some improvement about this instrument to entitle it to be called an invention, but as an instrument for the purpose stated, it has no claims to be called an invention, for the "Marine Salinometer," is a well known instrument.

The Voltaic Battery.

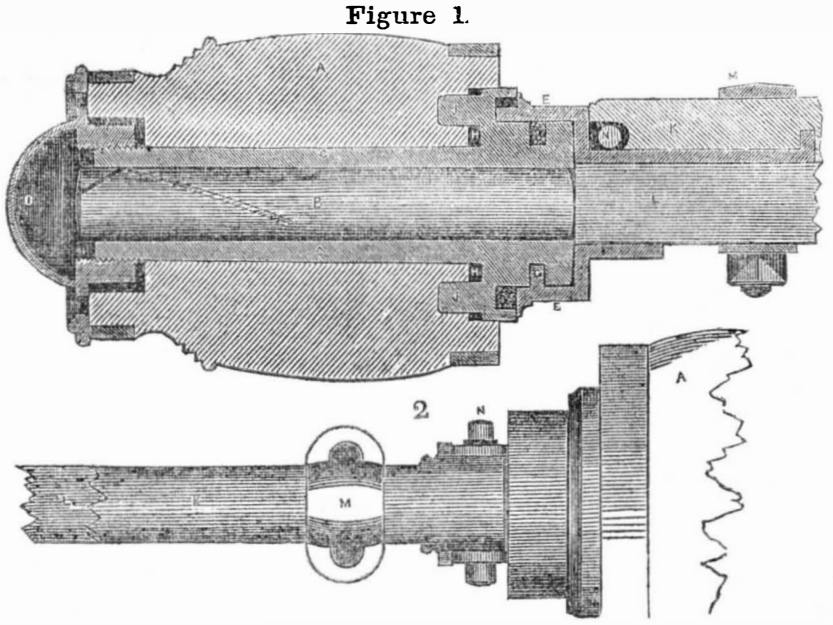
We request particular attention to the articles on the Voltaic Battery; they are furnished by the best practical electrical engineer in the country.

Pavements.

A new kind of pavement has been introduced for the streets of Boston. In constructing it, the ground is first prepared with a covering of lime, sand and coal-tar, to prevent an upward tendency of moisture. The pavement is composed of long and short wooden blocks set on their ends, alternately a long and short block. The spaces over the short blocks are then filled with broken or small stones, sand or lime, and hot tar is poured over the whole surface, and finally a covering of sand. The wooden blocks are each about three inches square on the surface ends, and so nearly fit the feet of horses that, aided by the composition between the long blocks, they have a good foothold and do not slip. The surface of the blocks being small and wearing a little rounded, prevents water from entering into the wood and causing decay, as is the case with blocks of larger surface. Should the wood shrink, the composition will expand by the pressure of horses' feet and wheels of carriages. This also prevents water from penetraing into the work, and insures durability to the pavement. The Transcript says, a street paved in this fashion ten years ago exhibits yet no evidences of deterioration.

SCRIPTURE'S PATENT AXLE COUPLING.

Figure 1.



This is an invention patented on the 30th of last July, by Mr. E. S. Scripture, of Green Point, L. I. It secures the wheel on the axle, forming a good substitute for a collar. It prevents the admission of dirt, and gives a neat finish to the back part of the hub, and it forms a tight box to retain the lubricating material. The cap nut in front forms an oil reservoir, and it also secures the pipe within the hub, and forms a fender for it. Mr. Scripture states that a journal 7-8 of an inch in diameter, with his improvement, will, without bending, resist the oblique action on the carriage wheel, as long as a journal one inch in diameter—as arranged in the usual way. The inventor was awarded a *first* premium at the late State Fair, at Albany—the silver medal and diploma.

Figure 1 is a perspective view, and figure 2 is a plan view of the attachments and inner end of the hub. The same letters refer to like parts. A is the hub; B is the journal of the axle; L is its continued square part; C is the pipe or axle box in the hub; E is a top box formed with a tongue running along the top of the axle bar, L; it has its inner end turned up to take into the wooden axletree, K. J J are projecting pins on the flanch of the pipe, C; they run into the hub; H is a washer of india rubber introduced between the flanch and the hub. The lower box, E, is a half circular box, nearly like the top one, E. G is a nib entering a groove around the end of pipe C; the chequered groove beside it represents a lubricated gasket; N is a pin or key passing through bars to secure the lower section box, E, in its place. By pulling out this pin, the axle can at once be drawn out of the hub; O is a hollow cup, containing lubricating material; it screws on the box and not on the axle. There is a spiral groove in the axle, so that the lubricating material is carried back along the whole journal of the axle. M is a strap and nut, which connect the wood axletree with the upper section box, E. By the use of the elastic india rubber washer, H, the box, C, is made to take a more even bearing, and it prevents a rattling of the parts The cup, O, holds both the hub and its pipe together, and furnishes an easy way to replace the pipe when worn out. The upper section box, E, entering the hub, prevents dirt, &c., from getting into the axle box. The wheel cannot run off the axle at all, owing to the nib and flanches of the section boxes resisting lateral motion. The gasket keeps the lubricating material from coming out. The claim is for he section boxes, E E, as constructed and combined with the axle box.

Letters addressed to the inventor, Mr. Scripture, will be promptly attended to.

Preparation of Butter for Keeping.

The following is said to be a good plan for preparing butter for long keeping :—

Into a clean tinned copper pan put any quantity of butter, say from twenty pounds to forty pounds, and place it over a gentle fire, so that it may melt slowly, and let the heat be so graduated, that the melted mass does not come to the boil in less than about two hours. During all this time the butter must be frequently stirred, say once in about five or ten minutes, so that the whole mass may be thoroughly intermixed, and the top and bottom change places from time to time. When the melted mass boils, the fire is to be so regulated as to keep the butter at a gentle boil for about two hours more, the stirring being continued, but not necessarily so frequently as before. The vessel is then to be removed from the fire and set aside to cool and settle, still gradually; this process of cooling is supposed to require about two hours. The melted mass is then, while still liquid, to be carefully poured into a jar in which it is to be kept. In the process of cooling there is deposited a whitish cheesy sediment, proportioned to the quantity of butter, which is to be carefully prevented from intermixing with the preserved butter.

Notice.

Inventors and Machinists who wish duplicates of their drawings, will be pleased to learn that we are enabled to duplicate for them one hundred or more copies of the drawings which we furnish for the Patent Office. The charges are moderate—from ten cents per copy, to one dollar or more, according to the amount of labor to be performed. We are led to believe that the arrangements we have made will be fully appreciated by our numerous machinists and inventors, when they realize the benefits which they will derive from the gratuitous circulation of their drawings among their friends, or among those who write to them upon the subject of their machinery or inventions. A great deal might be said of the utility and benefit derived by inventors, who are able to send duplicate drawings of their inventions to their friends at a distance, but we have neither time nor space to devote to it. To those of our friends who desire them, we shall be ready to attend to their wants promptly, correctly, and economically.

Improved Smut Machine.

Mr. Geo. Hathaway of Corning, N. Y., has made an improvement in Smut Machines, for which he has taken measures to secure a patent, and which appears to be a good invention, both on account of its simplicity, effectiveness and durability. He has a set of revolving arms in the inside a slat framed shell, and on each arm there are a number of longitudinal beaters made of iron. These, by revolving, beat the grain against the slatted shell, which is also made of the same iron, and a fan operated in the usual way, blows out all the impure matter, and the grain is delivered below beautiful and clean. In this smut machine, the action is a beating one, not rubbing, hence the parts do not get worn smooth and useless, but it maintains its working qualities till it is worn out. This machine can be made very cheap, because it is constructed of cheap and durable materials, and any good country blacksmith can make all its parts.

For the Scientific American.

The Post Office.

A large proportion of the letters transmitted by mail are unpaid letters; to require all letters to be pre-paid, even at a low rate, would have, I think, a tendency to check correspondence. By lowering the rate, undoubtedly more would be pre-paid, and the dead letters would not increase with the increase of letters. Many communications are made solely to acquaint the persons addressed of their interests, or of the fortune or jeopardy thereof. And some would deem it enough to acquaint others of their personal interest, without being necessitated to defray the transmission of the information. It seems to me that the States, individually, might reduce the expenditure of carrying the mails. Before the railroads were built there was competition for the transportation of the mails: now there cannot be; and the railroad corporations may be exhorbitant in their fees for their transportation. Many of the States, if not all, could probably regulate the tolls therefor, as well as tolls on turnpikes and canals. It is true that the rapid transportation by railroad is more valuable to the people than the former modes of transportation, and the proprietors should be well, but not exhorbitantly, compensated therefor. As the railroads were not built expressly for carrying the mails, it is not, or should not be, required of the Government to render undue and extra aid to support the railroads, and make them good investments for stock takers. The growth of the country will undoubtedly support the important tracks—and the tracks will increase the growth of the country.

A Country Postmaster.

Novel and Ingenious Experiment.

A cask of fine hardware and cutlery, says the Charleston Courier, accidentally fell overboard from the line ship H. Allen, lying at Boyee & Co.'s wharf. The contents of the cask were valuable, and a reward of fifty dollars having been offered by the Captain of the vessel for its recovery, it was restored to the ship's deck yesterday morning, through the exertions of Mr. Angus Smith. Mr. Smith provided himself with what he called a diving bell, by sawing in half an ordinary oil cask, then placing it over his head and shoulders, and attaching heavy weights to the edges of the inverted cask, which being air-tight, prevented the water from rushing in, his head occupying the vacuum; then letting himself down, he was enabled to remain under water from ten to fifteen minutes.

Iron Carpeting.

Iron flooring, instead of marble floors or oil cloth, is manufactured at Rochester, and used in some of the hotels.

Congress has adjourned. The doings of the last Congress, will be felt for a long time. The end of agitation is but begun.

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Scientific American

NEW YORK, OCTOBER 5, 1850.

City Graveyards and Funerals.

A false view of religion has been the means of entailing upon many generations an evil of the greatest magnitude: we allude to graveyards in cities. When we boast of a civilization superior to that of the Greek or Roman, our boast should always be modified with some striking exceptions. The old Roman law allowed of no funerals except without the walls of the city. This wholesome law was broken by the professed Christians, in an age when darkness covered the land; and the evil has come down to us, is among us, and it sometimes admonishes us by those stern and terrible monitors—pestilence and death. A law was passed in the late British Parliament, which enacts that graveyards in London shall be closed forever after July, 1851. This law is good—it is only a great pity that such a law was required at this late day. In New York the evils of city interments are well known, but for a fine, the charnel-house will open its portals and gratify the statute—a statute which the rich can set aside—the poor, never. This evil, however, may be said to be so small in the lower part of the city, as scarcely to deserve the name of one. This is no doubt true; but in the upper part of our city, for which a different law has been provided, the evil is a crying one, especially the vault system—it above all, deserves the severest censure. In some churches the gold-getting spirit is most reprehensibly developed. They have adopted a kind of warehousing system, combining part of their churches as receptacles for the dead, where, for certain sums coffins remain as goods in a bonded warehouse. In the cellar of one church, we have seen the coffins of those who died of cholera, piled in rows, beneath the very floor where the members met for worship. What a crying evil.

In connection with interring the dead, it is really grievous to see how much the spirit of mammon enters into every transaction, so as to make the bereaved pay well for the decent interment of the departed. If a new cemetery is to be opened, it will be held up as a philanthropic object, a commendable undertaking worthy of patronage, and so it would be, were it not for the stock-jobbing spirit which envelopes all such projects, for the purpose of coining money out of every turf devoted to cover the remains of our fellow mortals. The working men of our city pay high rents while they live, and they cease not to contribute to the same class of landlordism when they die.

There should be a law made forbidding all city interments for the future, in vault or churchyard, and were it possible we should like to see some means instituted, whereby those in the laboring walks of life would not, as now, be overwhelmed with the tremendous expenses which meet them at every step when fulfilling the last sad rites of sepulture, in decency, to their deceased relatives.

Elevated City Railroads.

We have received two communications within as many weeks, upon the subject which forms the heading of this article: the ideas in both are somewhat alike. They advocate the utility and advantages of a railroad above the side-walks. This subject has been before the public for a number of years; it is now, we think, five years since Mr. Randall first exhibited his "Elevated Railroad" for Broadway, to be propelled by stationary power, to make one set of carriages run in the one direction, and the other train in the contrary direction. Mr. Randall's plan was well conceived, and his model, which was exhibited three years ago, developed no small amount of ingenuity, and it worked well. We have seen no plan superior to his. R. V. De Witt, C. E., of Albany, constructed a good model of an elevated railway, which is now in the rooms of the Institute, along with drawings of the whole plan.

An underground or cellar railway was also proposed about a year ago, but although the plan was a good one to save street room, the expense of constructing such a railroad, would be enormous, and subterranean navigation would be anything but agreeable to the denizens of Gotham. We never expect to see either a subterranean or elevated railway in Broadway. Our reason for this opinion is, we do not see any necessity for them. Why make a subterranean railway, or why make an elevated railway? Surely it is more plausible to make an elevated walk for foot passengers, or a subterranean one for the same purpose, but we see no necessity for either. Those who imagine our streets to be very crowded, have different ideas of crowded streets from what we have. At any rate, all crowding of streets could be avoided by laying the rails on *terra firma*. We have never seen a good objection urged against a street railroad, and consequently none in favor of an elevated one, so long as the other plan is more feasible, and can be constructed at a tithe of the expense. A number of lines of railway through the different streets, would obviate all the crowding into one general thoroughfare, and we have no doubt but we will yet see lines of railways branching through the city, drawn by unsmoking engines, conveying passengers quietly, safely, conveniently and regularly through every part of our city.

Light from Water.

A short time ago we received a short communication from Mr. T. Prosser, C. E., of our city, who is an inventor and man of science, in relation to "the Electric Water Light." The article principally directed our attention to the expose of the "Resin Water Gas," of Mr. White, of Manchester, England, and which was exhibited at Castle Garden during the last Fair of the Institute. The expose is by Prof. Fyfe, Professor of Chemistry in King's College, Aberdeen, and published in a late July number of the "London Mechanic's Magazine." In that article Prof. Fyfe states that Mr. White had estimated his olifient gas produced from resin, to mix with hydrogen, at too high a per centage, and that his water gas (hydrogen dropped on a red hot chain or small pieces of metal), was useless to mix with the resin gas for illuminating purposes,—that the water gas was *nil*—only adding to the quantity but detracting from the illuminating power of the resin gas, which White mixed along with his hydrogen.

Mr. Prosser says, "I have also passed hydrogen through turpentine, and am inclined to believe that it has the effect upon its illuminating qualities described by Mr. Matthiot in the Scientific American, but I cannot believe that the turpentine is not thereby sensibly diminished."

A late number of the Manufacturers' and Farmers' Journal, Providence, R.I., contained a letter from a correspondent; he says:

"I caused the hydrogen to be generated in the vessel containing the turpentine, in such a manner that the particles of the gas might come in contact with the fluid soon after their liberation, while they were yet in their *nascent* state. On kindling the jet thus obtained, a beautiful white light presented itself, perhaps superior in illuminating power to that produced by the best burning fluid. As the action continued, however, the flame presently grew darker, especially at its upper part which was evidently loaded with particles of unconsumed carbon. A piece of glass held over it was soon coated with lampblack.

Suspecting these results to be due to the volatilization of a portion of the turpentine occasioned by the heat attending the production of the hydrogen, I lastly took a vessel containing merely the oil of turpentine, and having raised its temperature by immersing it in a mixture of sulphuric acid and water, I introduced, as at first, a stream of hydrogen. A jet of mingled gas and vapor escaped, which, on being kindled, gave me the same whiteand beautiful light as in the preceding experiment. As I raised still further the temperature of the turpentine, and caused more of its vapor to pass over with the hydrogen, the combustion was rendered incomplete, and the flame, as before, became smoke. Allowing the vessel, on the other hand, to cool down to the ordinary temperature, the light gradually declined in brightness, until it at length became too faint to be of any practical utility.

It has been stated that the hydrogen does not take up any appreciable quantity of the turpentine in passing through it—that it is merely *catalyzed*. To settle this question, I weighed the vessel with its contents, both before and after the experiment. In the first case, in which I employed the turpentine cold, I found that 40 grains had disappeared; in the second instance, when I raised its temperature, there was a disappearance of 90 grains—a quantity in either case as great as would have been expected from the amount of light produced. I see in these experiments no reason for believing that the hydrogen enters into union with the turpentine, or is in any way modified by it. The vapor of the latter, unaltered, may readily be detected in the jet, both by its odor and by precipitating it on any cold body, and it is undoubtedly to the combustion of this, rendered more intense and perfect by the presence of the hydrogen, that the peculiar brightness of the light should be attributed."

As this is a subject which has attracted a great deal of attention from the statements which have been made about Mr. "Paine's Light," we consider it to be our duty to throw all the light we can—fairly and openly—on the subject. We took the ground at first that hydrogen could not be produced cheaply. We have allowed room for the discussion on both sides—for figures to be shown "to prove all things," and we have seen no reason adduced for altering our opinion. Holding these opinions, we candidly admit that we have had no sufficient open experiments to prove the difference in economy between coal, or resin, and the electric carbon, "water carbon," and the hydrogen turpentine lights. It would require a fair competition between an "old coal gas company," and a "new light company," to prove which could manufacture light at the lowest price. We well know what wonders were to be performed by the "olifient gas companies," (making gas from oil) a few years ago, and how thousands were expended, and companies formed but to tumble down; and we are not forgetful, either, of the excitement created by the "Crutchett light," in Washington, a few years ago. All these have failed to compete, in the production of cheap light, with those companies who make it from cheap hydro-carbons—such as resin and coal. We must, however, admit that it is easy for Prof. Fyfe to knock White's house down about his ears, with a few figures all on one column, but there are always two sides to an argument, and when we know that no gas gives out any light until a certain amount of heat is communicated to it, we may also conclude, with the author of the article quoted above, that hydrogen has some effect in the perfect combustion of the carbon, and assists to produce a brilliant light; and to show that Prof. Fyfe may be mistaken, we will quote an article next week, from the Liverpool Mercury, showing the success of "White's Light." We would publish it now, but this article is of sufficient length upon one subject at once.

The London Industrial Exhibition.

A letter from the Hon. Abbott Lawrence to Prof. W. R. Johnson, recently received, makes the following appeal to his fellow citizens in the United States to do themselves full justice at the exhibition in London, in 1851:

I am happy to inform you that arrangements for the proposed exhibition are now being made upon an extensive scale in France, two thousand persons having, as I learn, already entered their names in France as exhibitors. Every country in Europe will contribute to this great show, and Egypt, Persia, India and China are preparing the products of their skill and labor for the exhibition. I believe that nearly all nations will come here in 1851.

I cannot but entertain the sanguine hope that the citizens of the United States will avail themselves of this opportunity not only of exhibiting the various products of our skill and labor, but induce as many men as possible to come here who possess the ability to profit by what they see produced by other countries. I believe, in a commercial point of view, we may reap great advantages by increasing our exports. To the inventors, mechanics, and skilful men in the arts and productive sciences, it will be eminently useful to come here and examine the products of mind and labor that will be brought together from all parts of the world; and above all, we have the opportunity of impressing upon all nations the extent, resources, and power of our great and favored country. If we present specimens of our minerals, agricultural products, manufactures, and inventions from the various States of the Union, I am sure that we shall make a deeper impression upon the public mind (as a nation) than could be accomplished by the exhibition of fleets and armies. If we come here as exhibitors of the progress we have made in the industrial arts, pray let it be in our full strength and power. It is one of those occasions when we should do our best. I will suggest the necessity of the early appointment of an agent in London to receive the articles intended for the exhibition.

New Muzzle for Rifles.

The muzzle of the rifle, as it is ordinarily constructed, must be made a little larger than the main bore of the rifle barrel, in order that the instrument may be loaded. By making the muzzle larger than the bore of the barrel, practical gunners think that the force of the charge is diminished, and the aim at the mark or object is rendered less certain. Hence, has been experienced a difficulty, and to remove the difficulty has been a great desideratum among gunsmiths. The Boston Cabinet remarks: We have lately seen a new muzzle, designed to remedy the difficulty, at the Rifle Barrel factory of Messrs. Thomas C. Smith & Co., Worcester, Mass. The new muzzle has a bore, tunnel-shaped, partly;—the bore in the bottom of the new muzzle being of exactly the size of the bore of the rifle barrel and the bore in the top of a new muzzle being larger, to receive the charge and ball designed to be introduced into the rifle, to which the new muzzle is applied. The new muzzle, during the process of loading, is fastened to the end of the rifle barrel by means of four dowel pins, which are suited to four holes, drilled into the end of the rifle barrel. When the rifle is loaded, the new muzzle can be easily displaced from the barrel, and may be carried in the gunner's pocket. Not being so much as even an amateur sportsman, we cannot judge of the utility of the invention. And yet we are aware of the fact that Messrs. T. C. Smith & Co., are answering frequent orders for the new muzzle.

[The above we extract from an exchange, and as we have seen it slightly altered in more than one paper, it may be as well to throw some light on the subject.

There is a Patent Loading Muzzle, termed "Clark's," which, if not new, is good; there is no question about that. Mr. E. Wesson, deceased, the famous rifle manufacturer at Hartford, Conn., owned the patent, but since his death it has been bought by Mr. Clark, Jr., we believe. Those who desire to get enlightened on the subject, have but to consult that excellent book, the "American Rifle," by J. R. Chapman, C.E., one of our ablest correspondents.

Telegraph Case.

Last week, before Judge Kane, Philadelphia, U. S. Circuit Court, the case of Morse's Assignees against Bain's Assignees, for infringement of Morse's Chemical Telegraph Patent. The motion was for an injunction to restrain the defendants from infringing. The case was set down for final hearing on the 11th of next April. Why don't the assignees of Morse bring up the case in New York, where the fullest light could be thrown upon the subject.

Upwards of one thousand Irish immigrants have arrived at Boston during the past week. While thousands of the Irish are immigrating to this country, the Scotch farmers are leaving their country and emigrating to Ireland, to take possession of the good tillage land lying waste for want of cultivation.

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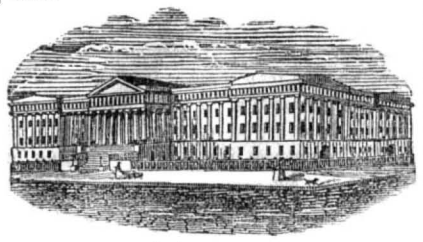

☞Reported expressly for the Scientific American, from the Patent Office Records.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.

FOR THE WEEK ENDING SEPTEMBER 24, 1850.

To John Batchelder, of Boston, Mass., for improvement in Sewing Machines.

I claim the machinery herein described for making the stitch viz.; the combinations of the hook, the plyer, and needle, as constructed and made to operate together; substantially as described.

To E. B. Bigelow, of Clinton, Mass., for improvements in Looms for weaving Tapestry and Brussels Carpets.

I claim closing and opening the supports or guides as they are raised and depressed to receive and support or guide the wires, and to liberate them in the manner substantially as herein described.

And I also claim the employment of a stop-motion in looms for weaving looped or piled fabrics in which the pile is formed on wires for the purpose of stopping the loom whenever a wire fails to be introduced, substantially in the manner described.

To J. C. Booth, of Philadelphia, Pa., for improvement in processes for refining gold.

I claim, first, the process of dissolving alloyed gold, for refining it by developing nitric acid, or both nitric and muriatic acids gradually from their salts, in the manner and for the purpose set forth in the specification.

Second, I claim the process of precipitating gold from its solution and removing therefrom the insoluble chlorides as set forth.

Third, I claim the process of refining alloyed gold without the use of silver, so as to form a solution of gold and other metals and a residue of chloride of silver and of other insoluble chlorides, and then precipitating metallic gold upon those insoluble chlorides in the same vessel without transfer, after the solution is effected; and afterwards dissolving out the insoluble chlorides from the gold; or reducing the insoluble chlorides to the metallic state in the wet way, and dissolving out the metals from the gold, all in the manner hereinbefore described. But I do not claim dispensing with the use of silver except as a part of the main process herein described.

Fourth, I claim the process as described of dissolving alloyed gold in wooden vessels which may be made of any dimensions corresponding to the extent of the operation.

Fifth, I claim the process as described of dissolving alloyed gold by blowing steam directly into the solvent liquids all in the manner as hereinbefore described.

[The fourth claim here is one of those curious affairs in which the Patent Office sometimes exhibits a great amount of brightness. In all likelihood a poor inventor would have had to pay $30 extra, for a second patent.]

G. W. Bowers, of Leitersburgh, Md., for improvement in in grain-cleaning machines.

I claim the combination of the revolving slotted hollow barrel with the toothed wheels, being arranged and operated substantially in the manner and for the purpose herein set forth.

To D. S. Brown, of Surrey, Eng., for improvement in machines for fumigating plants. Patented in England Sept. 13, 1849.

I claim the combination in apparatus or instruments for fumigating purposes of a destroying magazine containing the fumigating or obnoxious substance, with a cylinder and exhausting fan or wheel, whereby the smoke is drawn in at one part of the cylinder and driven out at another and whereby also the atmospheric air necessary for the combustion of the substance is drawn into it by the said fan or wheel, both as before described.

Henry Evans, of New Bedford, Mass., for improvement in Machines for making ropes.

I claim to support the frame, E, of the gears and stand spindles, on the main laying shaft alone, and combining with the said frame, and the main frame of the machine, the lever, U, or suitable machinery, whereby the said frame of the gears and stand spindles may be either clamped to the main frame, or so fastened as to be prevented from revolving, while the main laying shaft and stand spindles are in revolution on their respective axes, or be unclamped or unfastened therefrom as occasion may require, and for the purpose of enabling the strands to be laid or twisted together without previous removal from their spindles, as heretofore practised, and above described.

Elijah Hall, of Cabotville, Mass., for improvement in stop-motion of Looms.

I claim the manner described of securing the movable reed bar and reed while the filling is being put in and releasing them after the filling is completed by the combination of the levers, having arms, and snecks, and the springs H H and J, the whole being arranged and operated in the manner substantially as herein set forth.

To D. W. Harris, of Yorkshire, N. Y., for improvement in the construction of Threshing Machines.

I claim the threshing cylinders constructed of fast and loose sections the fast sections of one cylinder being opposite the loose sections of another, substantially as herein set forth.

Ephraim Howe, of Brooklyn, N. Y., for improvement in Burning Fluids.

I claim the compounding rosin and the essential oil of vegetables or grain (when the same is produced by distillation of whiskey or alcoholic liquors, and thereby become a refuse article) for the purpose of making a material from which to make gas; also for a burning fluid, as set forth herein, whether compounded in the precise proportionate quantities set forth or other quantities which will produce substantially the same result, all of which is fully set forth herein.

To O. S. Leavitt, of Maysville, Ky., for improvement in machinery for drawing hemp and parting its fibres.

I claim the employment of two sets of holding and drawing rollers, substantially as herein specified, in combination with a rotating cam or the equivalent thereof, for each sliver, in the manner and for the purpose substantially as described.

To Jason M. Mahan, of Philadelphia, Pa., for improvement in casting stereotype plates.

I claim the employment of the dipper constructed substantially as described in the vertical casting of stereotype plates, in the manner herein set forth.

To R. S. McCulloh, of Princeton, N. J., for process of reducing gold bullion.

I claim, first, the reduction of argentiferous and other gold bullion, as a preparatory process in the art of refining thereof, into a pulverulent or spongy state, or a disintegrated molecular condition, by the means particularly of fusion therewith, and the subsequent removal by acids therefrom, of zinc or other metal baser than silver, which will produce the desired effect, for the purpose of then separating by acids from such gold bullion the silver and other impurities which it may contain, without quartation with silver, or any intermediate process, in order to fit the gold for coinage and other uses.

Second, I also claim, in addition to the above processes, the pulverizing by grinding, crushing or percussion, of gold bullion rendered brittle by union with lead, solder, or other like base metal, for the purpose set forth in the specification.

To Joseph Metcalf, of Worcester, Mass., for improvements in removing electricity from wool in the process of manufacture.

I claim the removal of electricity from its fibres, substantially in the manner and for the purpose herein set forth, but irrespective of the form, arrangement or construction of the apparatus by which such removal of electricity is effected.

To P. A. Palmer, of Le Roy, N. Y., for improvement in heating elevated Ovens.

I claim the arrangement and combination of revertible flues in elevated ovens of cook stoves in the manner and for the purpose herein described.

To C. A. Read & T. Cotter, (assignors to Chas. A. Read,) of New Hartford, N. Y., for improvements in machinery for fulling cloth.

We claim the above described mode of fulling fabrics by means of toothed cylinders by power machinery, the fabric being fed between the fulling toothed cylinders by means of feeding rollers through guides with sufficient rapidity to prevent all strain upon the fabric, and at the same time to supply the fulling cylinders which receive the fabric, full it and then pass it out between two cleaning rollers, which receive it from the fulling cylinders, prepared for other processes. The movements of the several parts of the machine being produced by a combination and adjustment of mechanism, similar to that herein described and represented, or any other, which may be substantially the same and by which analogous results may be produced.

To Timothy Rose, of Cortlandville, N. Y., for improvement in Water Wheels.

I claim making the discharge aperture of the shutes movable, relatively to the axis of the wheel, or the axis of the wheel movable relatively to the aperture of the shute, substantially as described, for the purpose of varying the effective diameter of the wheel, and thereby increasing or decreasing the velocity thereof, substantially as described.

To George Wright, of Washington, D. C., for improved machine for forming and charging caps.

I claim, first, the combination of the several motions given to the sheet of metal, by which it is presented to the cutting punch by an intermittent motion from right to left, and vice versa, and when the edges are reached, reversing the direction, and at the same time advancing the sheet, so that the blanks are punched in successive rows across the sheet, substantially as set forth.

Second, I claim the chisel moving with the punch stock, by which the perforated sheet is cut into srips, for removing it piece-meal from the machine, substantially as described.

Third, I claim giving such a form to the slots of the carrying plate, that the cups when lifted from the shaping die, are caught by them and taken on, substantially as described.

Fourth, I claim, in combination with the slots of the carrying plate, the conducting groove, by which the caps are guided transversely in the slots, and made to present themselves accurately under the charger and polisher, and to drop out, when completed, through the holes at the end of the slots, substantially as described.

Fifth, I claim operating the cap holder and the revolving polisher, or pressing punch, by a single cam, in connection with the strong and weak springs, substantially in the manner and for the purposes set forth.

Lastly, I claim the combination in one automatic machine of the several processes, by which the percussion caps are cut out of a sheet, shaped, charged, and the charge polished down, substantially in the manner described.

DESIGNS.

Of Walter Bryant, of Boston, Mass., for design for a Blower-stand.

I claim the new design herein above described, for a blower-stand, consisting in forming the two halves of said stand in the form of an ancient lyre frame, ornamented with volute scrolls, as above set forth.

To C. F. Tuttle & J. S. Bailey, of Williamsburgh, N. Y., for design for plates for Registers, Ventilators, &c.

We claim the particular configuration or design of open scroll or fret work substantially as described by the annexed drawing, and alluded to in the foregoing specifications. The said designs used by us as a top or front plate of hot air registers and ventilators and for other useful and ornamental purposes.

[There are six claims for six patents of designs of Messrs. Tuttle & Bailey. The words of the whole six are the same as this one; there is, therefore, no use in repeating the same thing six times over, although we have paid for the information to the Patent Office.]

To R. J. Blanchard, (assignor to B. P. Learned & G. H. Thatcher,) of Albany, N. Y., for design for Stoves.

I claim the designs and ornaments consisting of cornucopias and fruits issuing from them, and of vines and leaves issuing from scrolls, as they are delineated in the accompanying drawings, and herein described. I claim the ornaments represented, whether the same are made in open work or in relief.

To J. G. Lamb, of Cincinnati, Ohio, for designs for two Stoves.

To Wm. Savery, of New York, N. Y., for design for Stoves.

Another Discovery of Mr. Paine.

GENTLEMEN:—Some time since I selected your paper as the medium through which to announce the discovery of a method of decomposing water by mechanical means, and at a cost of the interest of the machinery used, only. Since the announcement, various public and private exhibitions have proven the truth and success of the discovery to a sufficient number to substantiate the fact, and since the announcement, too, the great mass of the scientific world have denied the possibility of the results claimed, while none have asserted claims adverse to my priority of discovery. I have therefore succeeded in what I attempted, viz.: the establishing of an indisputable claim to the priority of the method or discovery.

While the plan of keeping my own secret has been productive of such desirable results, it has also enabled me to prosecute further experiments with the newly discovered properties of electricity, unmolested and unembarrassed by contentions with others; and I now, with the same views and feelings that I made the first announcement, have the pleasure of stating that I have succeeded in making certain bodies repellent, or repulsive to water, when immersed in it. For instance—the whole surface of a vessel's bottom and sides, (of a peculiar form) from the stern post to the broadest cross-section, has, by a peculiar electrical state, a repulsive action upon the fluid, which buoys it up, and consequently the vessel has an onward motion so long as this electrical action continues. This electrical actien is furnished and continued by magneto electricity, and if the vessel's course is in a circle, her motion will be perpetual.

Now I do not ask, do not expect, or wish, that the scientific world should believe this announcement—I only hope that they will deny it, and this hope is predicated of the same feelings of self-interest that have governed my actions hitherto. The nature of my experiments involve at least the possibility of my being suddenly removed from this experimental world, and although I am not particularly ambitious of posthumous fame, yet, as far as that fame may benefit the loved ones I may leave behind, so far am I jealous of my rights; and this is one great cause why I place in black and white in your columns, in advance of their full completion, the discoveries that I am making, so that in after time no dispute can arise as to time and date.

I am aware that I have opened a fine field for learned bodies to practice scientific gambols in, and I have not yet forgotten the insult and abuse which the first announcement brought down upon my head; yet, nevertheless, I shall keep my secret till I accomplish one more undertaking, though the cry of "humbug!" follow me to the mad house. Yours,

HENRY W. PAINE.

Worcester, Sept. 9, 1850.

Accidents.

On last Saturday, while the "Pacific" American steamship was preparing to depart for Liverpool, the guards of her paddle boxes came in contact with the unfinished shed on the pier and tore it down. Two men was killed, and about 20 wounded. Considering the great number of people, who were under the shed at the time, providence tempered mercy with judgment.

Cure for Scalds and Burns.

A mixture of chalk and white of eggs, is said to be a most excellent remedy for burns. This mixture should be applied from time to time on the scald or burn, by dipping a linen rag in a cup containing the said mixture, and then applying it to the injured part.

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TO CORRESPONDENTS.

"J. M. C., of N. Y."—Your diameter of pipe is 2 inches, and fall 20 feet: the weight of this column of water is 27·26 lbs.; allowing this weight to fall the 20 feet every second (near enough for all practical purposes) you have 27·26×20=545·20×60=32,712÷33,000 which will make about 288-1000 less than one horse power, from which 30 per cent. should also be deducted for friction. This power would be of little value to drive your 8 inch saw. The power of water to produce mechanical effect is as the quantity and fall of the perpendicular height. A horse power is equal to 33,000 lbs. lifted one foot high per minute, or equal to that weight of water falling 1 foot per minute: you will, therefore, see the way to calculate water power. Water falls 16 feet in 1 second, 20 feet in 1·117 seconds.

"H. S., of Ill."—You can make the chain pump yourself; it consists of a number of round plates of thick leather secured on a chain or rope, passing over a roller at the top, and one at the foot in the water. This chain is endless, and comes up through a round wooden box or pipe, in which the discs of leather fit nearly tight. These discs carry up the water; place them about 6 inches apart.

"M. R., of Ohio."—The best cement you can use is plaster of paris and burnt alum, pounded fine and mixed up quickly, and then applied. Common hydraulic cement is the kind generally used, it can be bought ready to be made up.

"J. W., of Tenn."—We have been endeavoring to find such a machine as you want, in order to furnish the drawings. Hope to be successful.

"F. L., of Texas."—We have no later information than was published in No. 1. You had better communicate with Dr. Gorrie at Apalachicola.

"A. D. B., of Geo."—We have addressed a line to Mr. H. in regard to your business. As soon as we hear from him we shall write you.

"R. S. M., of Pa."—You will hear from us by letter in a few days.

"R. J. McC., of S. C."—Mr. F. is not in the city. We think he went to Europe about a year since which is the last we have heard of him.

"G. P., of Mo."—A mixture of glue and flour starch is used for the wadding; glue itself will answer. It is put on by rollers, the same as printers' rollers. See No. 31, our last volume, for an illustration.

"Tudo, of Ill."—Various acids dissolve various metals. Nitric and muriatic acids dissolve gold. It all depends on the strength of the acid whether water is mixed or not; no battery is used to dissolve metals in, except in electrotyping. If you get a good work on electrotyping it will give you all the desired information.

"A V., of Ohio."—We do not know of any plan like yours in use: it is new to us, but we would not advise you to apply for a patent: weigh the matter well yourself; it will cost you $60, at least. The first thing to be done is to make a neat small model of your improvement, as applied.

"D. McA., of Phila."—The value of a mechanic, which you speak of, is above our valuation, but the wages is from $1,50 to $2 per day. A good man was wanted last week, by Mr. Waterman at the Hudson River Railroad, 31st street, N. Y.

"D. M. of Ohio"—The lathe is just the thing you want for straight turning. One can be shipped by any regular line via Buffalo.

"J. H., of Ohio."—Your paper is sent every week from this office and ought to reach you regularly. The numbers lost have been sent forward.

"O. W. W., of N. Y.,—We have no advices from your case as yet. You will hear from us without delay after the case is examined. $6 received.

"L. & J., of S. C."—Your request will be attended to, and the volume sent by the next Charleston steamer.

"A. W. P., of Cin. Ohio."—Your plan for heating tyres is no doubt good and should be adopted by blacksmiths, as the same plan has ong since been by engineers.

"A. S., of Mo."—We do not know where the cobalt occurs except at Mine," La Motte, in your own State, in the form of pyrites; the price we don't know. We are always happy and thankful to receive useful and practical articles on any subject. We never sell anything in the line you speak of, it would not do for us to be engaged in the business.

"S. A. W., of Vt."—We are sorry to say that the numbers you want cannot be supplied.

"R. B., of Ark."—Cannot supply you with the back Vols. except Vol. 5.

"A. W. D., of N. Y."—You can dissolve India rubber in turpentine—this is the common substance used. The best way to take the power from the breast wheel, is to have two rims on it, gearing into two pinions three feet in diameter on a parallel shaft, to transmit the power by other gear machinery. This mode will make all the machinery work steady, and prevent it from sudden jars.

"L.R., of —."—Your ink has had too much acid in it, for it has become illegible—it cannot now be read; so far as we can judge, your drawing is similar to the pendulum plummet in Vol. 1, Sci. Am.

"J. O. R., of Mass."—You can purchase good Cameras and materials of John Roach, optician, 82 Nassau street, this city.

Money received on account of Patent Office business, since Sept. 24, 1850:—

W. H H., of Conn., $50; A. W. P., of O., $30; J. A., of N. Y., $75; J. O., of Conn., $30; B. D. S., of Va., $50; B. N., of N. Y., $30; T. F., of N. Y., $30, and W. Van A., of N. Y., $500.

Bound Vol. 5, Now Ready.

Those desiring Volume 5 of the Scientific American are informed that we are able to furnish a few complete volumes, bound, at $2,75 each. Also, we can send by mail sets complete, minus No. 1 for $2. Volume 4, incomplete sets, comprising about 35 Nos., will be forwarded by mail on receipt of $1.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and the year the patent was granted (adding the month of the year when convenient), and enclosing one dollar as fees for copying.

Important Notice to us!

Whenever any of our friends order numbers they have missed—we shall always send them, if we have them on hand. We make this statement to save much time and trouble, to which we are subjected in replying, when the numbers called for cannot be supplied.

ADVERTISEMENTS.

Terms of Advertising:

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

FOWLERS & WELLS, Phrenologists and Publishers, Clinton Hall, 131 Nassau st., New York—Office of the Water Cure and Phrenological Journals. Professional examinations day and evening. 3 6m

COTTON LOOMS.—100 second-hand 4-4, have been well used but a short time, modern pattern, and as good as new; they will be sold low to close a concern, and can be seen at any time upon application to S. C. HILLS, Machinery Agent, 12 Platt st., N. Y. Letters must be post-paid 3 4

TO IRON FOUNDERS, &c.—Fine ground and bolted Sea Coal, to mix with moulding sand, an approved article ground from selected lump; Charcoal Foundry Blacking; Bolted Lehigh, Soapstone, Black Lead Foundry Facing; also Fire Clay, and Iron and Brass Founder's superior Moulding Sand, in barrels, for sale by G. O. ROBERTSON, New York. City Office 4 Liberty Place, Maiden Lane, near the Post Office. 3 4*

FACTORY AND WATER POWER—For rent or sale.—A factory building in New Brighton, Beaver Co., suitable for woollen or cotton factory, 40 by 96 feet, three stories high, with plenty of water power. The driving power is now being made new, and if applied for soon, can be made to suit the renter. Apply to A. W. TOWNSEND, near the premises, or to J. W. GILL, Wheeling, Va. 3 8*

DR. STEWART'S SAFETY FLUID LAMP—Rights for any of the States, or for the whole United States, for this valuable Lamp, patented July, 1850, are now offered for sale on the most liberal terms. Land, or good trade, will be taken in part payment. Dr. FRANK STEWART, Swaim's Laboratory, Seventh st., below Chestnut, Phila. 3 4

PROSSER'S PATENT LAP-WELDED Boiler Tubes—Diameter, Number and Length of each at date:—

Inches.			In Stock.				Afloat.
1 1-4	-	-	999	7-0	-	-	—
1 1-2	-	-	164	10-6	-	-	—
1 3-4	-	-	25	10-6	-	-	—
2	-	-	215	10-0	-	-	—
2	-	-	1052	12-0	-	-	721
2	-	-	849	14-0	-	-	—
2	-	-	1221	15-0	-	-	—
2	-	-	77	4-9	-	-	—
2 1-4	-	-	758	15-0	-	-	—
2 1-2	-	-	544	15-0	-	-	—
2 3-4	-	-	514	15-0	-	-	—
3	-	-	255	15-0	-	-	—
4	-	-	4	15-0	-	-	—
5	-	1	1	15-0	-	-	—
6	-	-	14	15-0	-	-	—

THOS. PROSSER & SON, Patentees,
October 1, 1850. 28 Platt st., New York.

Patent Office.

128 FULTON ST.

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WE WOULD remind our numerous friends throughout the country, that we still continue to conduct the business of procuring Letters Patent for new inventions in this and all foreign countries, where the right is recognized. Since making arrangements with those eminent attorneys, Messrs. Barlow, Payne & Parken, Editors of the London Patent Journal, we have secured and managed through them, several foreign applications, with the utmost economy and facility. Inventors and others, desiring advice upon this subject, can correspond confidentially with the Editors of this paper.

TO INVENTORS.—The subscriber wishes to purchase the whole or part of some new, useful and patentable article adapted to the use of housekeepers. Some labor-saving machine that can be introduced into any and every family; a patented article would be preferred. As this article will be sold principally in the States of Ohio, Kentucky and Indiana, it will not interfere with any sales in any other States. Any person having anything new in the housekeeping line, they wish to sell, will please address WILLIAM BURNET, No. 14 East Fourth st., Cincinnati, Ohio. No washing machines, churns or stoves, of any kind, wanted. No letters will be noticed unless the postage is paid. 2 2*

DUPLICATES OF DRAWINGS.—One hundred or more copies of the drawings required by the Patent Office, can be furnished at short notice, and upon reasonable terms, by MUNN & CO., Scientific American Office, who have made arrangements to duplicate drawings of machinery and inventions, at prices varying from ten cents per copy, upwards.

PATENT METALIC OIL FOR MACHINERY—Warranted not to gum. Manufactured under Cumberland Brothers patent (April 6th 1849), by C. E. de la Vergne & Co., Elizabethport, N. J. Transparent metalic, adapted to light bearings, spindles, &c., will last a quarter longer than pure sperm. For burning will be found superior. Fluid White Metalic, of the consistance of cream, to be used without wick and tube, adapted to the oiling of engines, shaftings, &c. will last twice as long as pure sperm oil. Hard White Metallic, to be used instead of tallow, will last three times as long; when used in cylinders, the packing must be renewed. Blue Metallic grease, prepared for greasing the inside of boilers when thoroughly cleaned, that the scale which afterwards collects may be removed with one third the usual time and expense. It is also adapted to the greasing of cog wheels; and for the axels of vehicles it has been found to last more than four times as long as any grease ever used for that purpose.

KENNEDY & GELSTON, Sole Agents,
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LATHROP'S PREMIUM BEE PALACE.—This Palace is no patent, and no humbug, but for cheapness, neatness, simplicity, durability and perfect adaptation to every want of the Bee, and the interest and convenience of the owner, it has no equal. It has been tested by hundreds of swarms, and proved completely successful, for three years. It has taken a premium at three Fairs; a gold medal has been awarded it by the Mechanics Institute, of Chicago, Ill. It requires no care nor skill in the use of it—all may use it with success. Millions of dollars may be saved annually in our country, which are now lost, by using this Palace for working that most profitable of all insects—the Honey Bee. Engravings, and a specification of this Palace, sufficient to enable any joiner to make it, will be sent by mail, free, to any one remitting $1 to the inventor, at La Salle, La Salle Co., Ill. D. LATHROP, 1 3*

12 POWER PLANING MACHINES.—SCRANTON & PARSHLEY, New Haven, Conn., have now finishing off 12 power Planers that will plane 8 feet long, 27 inches wide and 24 inches high; these planers are of the first quality, are self-feeding every way; the table is worked by a rack and pinion; the bed is 12 feet long. With each planer there is a splining head and counter shaft, pullies and hangers. They weigh about 4000 lbs.; the price, boxed and ready to ship, is $625. Also 12 hand lathes, with back gear on iron shears, and legs 7 feet long, swing 20 inches, about 700 lbs. weight—$75. These lathes are of the first quality. 1tf

TO IRON FOUNDERS AND MACHINISTS in the Northern and Eastern States.—The Subscriber, sole agent for the sale of rights to make and sell the celebrated Bogardus Horse Power, will contract with any one disposed to manufacture the best horse power in the world, upon reasonable terms. Address GEORGE VAIL, Morristown, N. J. 1am1y*

IMPROVED STEAM ENGINE FOR SALE.—The subscriber has four of his improved steam engines of three and six horse power left for sale. They ard made of the best materials—steel piston rods, metalic packing, heavy iron frames, governors and pumps, all complete for $135 for a three, and $235 for a six horse power. Boilers will be furnished for eachengine, if required, for about $120, or $190 for a double one.

JAMES WYLIE, Engineer,
51 4* No. 2 Bethune Street, N. Y.

ALCOTT'S CONCENTRIC LATHES.—We have on hand a few of these celebrated Lathes, which the inventor informs us will execute superior work at the following rates:—

Windsor Chair Legs and Pillars, 1000 per 11 hours. Rods and Rounds, 2000; Ho Handles, 800; Fork Handles, 500; Broom Handles, 150 per 11 hours.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch, and work as smoothly as on a straight line, and does excellent work. Sold without frames for the low price of $25—boxed and shipped, with directions for setting up. Address, (post paid). MUNN & CO.,
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A CARD.—The undersigned begs leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to his new and extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manufactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very reasonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instruments, 154 Fulton street. 1 3m*

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
48tf Painters and Chemists

COTTON, WOOLEN AND SILK MANUFACTURERS' DEPOT.—ANDREWS & JESUP, No. 70 Pine st., N. Y., dealers in articles for the use of Cotton, Woolen and silk manufacturers, and agents for the sale of shearing, carding, burring, napping, wool-picking, flock-cutting and waste machines, regulators, satinet and jean warps, &c. Weavers' reeds and heddles, bobbins and spools, of every description, made to order. Sperm, lard and olive oils and oil soap. 1tf

WOOD'S PATENT SHINGLE MACHINES—These excellent machines, illustrated and described in No. 23, Vol. 5, Scientific American, are offered for sale in Town, County and State Rights, or by single machines. There are three sizes, the first cuts an 18 inch shingle, price, $100; 2nd cuts 24 inch, price $110; 3rd, 28 inch, $120. Orders addressed to J. D. Johnson, Redding Ridge, Conn., or to Munn & Co., "Sci. Am." Office, will meet prompt attention.

The above machine can be seen in successful operation at P. R. Roach's mills, No. 138 Bank st., this city. 51t

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BRUSH'S IMPROVED DOUBLE-ACTING LIFT AND FORCE PUMP.—From the increased facilities of the subscriber, he is now prepared to furnish, at a reduced price, the most effectual, powerful, durable and yet simple Lift and Force Pump in use. For a house pump, factories, breweries, railroad stations, or any other purpose where a constant stream of water is required, they cannot be surpassed. The public are cautioned against an article purporting to be Brush's Pump, but are invited to call at or address 83 Pike Slip, and get the original. J. A. BRUSH, Inventor. 49 3m*

BURR MILL STONES.—We have made arrangements which will enable us to supply all kinds of French Burr, Holland and Esopus Mill Stones of the best material and manufacture, at the lowest prices. Burr Mill Stones made to order and warranted to be of the best quality; Burr Blocks for sale.—Orders addressed to MUNN & CO., post-paid, at this Office, will meet with prompt attention. 41tf

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1tf Treasurer Boston Locomotive Works.

UNITED PATENT OFFICE IN PARIS AND LONDON.—GARDISSAL & CO., 29 Boulevard St. Martin, Paris, and No. 9 Arthur st. west, city, London. Patents procured in Great Britain and on the Continent: "Le Brevet d'Invention," weekly journal, published by the same firm. 3 4eow*

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Scientific Museum.

Spectacles.

A simple Hibernian, who knew not one letter from another, once bought a pair of spectacles to enable him to read; and we must say that there are thousands who, if they do not buy spectacles for the same object as Paddy, yet they have no more knowledge concerning their nature and true office than him. A pair of spectacles is an optical instrument, which is made from a knowledge of the laws of light. The minutest point of an illuminated object darts out its rays in all directions, like the spokes of a wheel, and strike the eye through the whole extent of its outer surface: millions of points of light are discharged upon the eye, and its office is to reduce these rays to order. A ray of light bends when it enters a new substance, if that substance is rarer or denser, than the substance through which it passed before. The eye gathers, as it were, the spreading rays into a bundle, till they meet in a point, like that from which they started. The eye, therefore, bends the rays of light, and brings them to a focus, and the picture of an object must be painted on the retina, at the back of the eye, therefore the rays of light must not be brought together before the retina, nor behind it, but upon it, otherwise the sight will be confounded; it is this confusion of sight which spectacles are designed to correct. In advancing years the eyes lose a part of their bending power, for the ball and crystalline lens get flatter, and their globular shape has a principal share in producing the effect. The rays are not drawn inwards with sufficient force, and arrive at the retina before they can meet in a point. A curved glass operates upon light like the eye itself, but interposed before it does a portion of its work. The rays are bent in passing through the glass, and the eye, which was incompetent to the entire task, is able to complete what the glass begins. When the organ is nearly equal to its duty, a slight curvature, just enough to make good the deficiency, is given to the spectacles, and as the eye fails, their rotundity is increased; an exact proportion is thus kept up between the demand of nature and the supply of art.

Though near objects require spectacles to show them distinctly, those more distant may be seen in perfection without their assistance. Since the rays from a point keep separating as they travel, all which branch out widely, are soon too far asunder to fall within the narrow circle of the eye. The least divergent alone hit it, and these are the easiest reduced to union. But an eye brought close to the object catches the divergent rays at their source, and, if its capabilities are diminished, is unable to master them. Here spectacles are a necessary aid, while the lesser task is readily performed by the naked eye. One of the earliest indications of an alteration in the sight is the holding a book further off than before, to get rid of the unmanageable part of the light.

Some eyes, which are over-round, refract the rays in excess, and bring them to a focus in front of the retina; the result is shortness of sight. The eye must come nearer to what it wants to distinguish, and imbibe those spreading rays which demand an additional bending equal to its own superfluity of power. Hollowed or concave glasses obviate the need for greater proximity. As round or convex spectacles draw in the rays, so these turn them out till their increased divergence is equivalent to the superior force of the eye. Thus spectacles are a remedy for opposite defects. One sees obscurely what is under his nose—another is blind to all that is not.

To Zinc or Galvanize Iron.

Clean the iron well by sulphuric acid and sand, then wash it in clean water; have the zinc melted in a pot, in which should be placed some tallow to keep the zinc from evaporating. Also, put some sal ammoniac in the zinc, and then dip in the iron for galvanizing; some recommend the use of a separate bath of dissolved sal ammoniac, into which the iron should be dipped just before immersing in the molten zinc. Some put the sal ammoniac in the zinc, and do not use any tallow. The zinc is very volatile, and great care must be exercised, not to let it escape in gas.

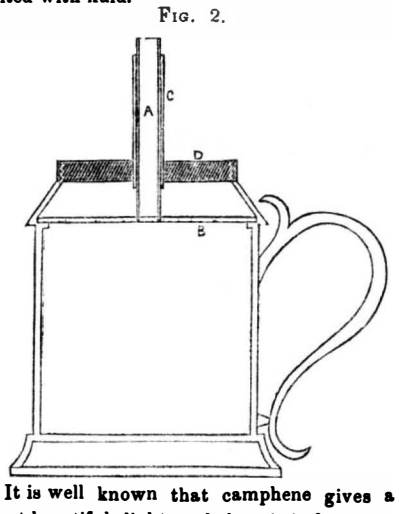
Patent Safety Spirit Lamp.

This lamp has an improvement in its construction which makes it perfectly safe for the burning of inflammable fluids. It is the invention of Frank Stewart, M. D., of Philadelphia, and a patent was granted to him, the claim of which was published in our list of July 2nd, Vol. 5. The object of this lamp is to provide a remedy for the numerous and afflicting accidents which are continually occurring through carelessness and negligence of servants and children, by filling up lamps, when ignited, with inflammable fluid. The nature of the improvement is in providing an inner stationary tube, to retain the wick, and to permit the cap of the lamp to be screwed on and off at pleasure, but so arranged, that when the cap is taken off, the flame is at once extinguished.

Fig. 1.

Fig. 1 is a perspective view, and fig. 2 is a vertical section, showing the interior. The lamp may be made of any of the known forms. A is the fixed stationary tube, for retaining the wick; it is secured in a cross-bar, B; this bar may be made of brass, and fitted with a thread, and the lower end of this tube may have a screw to fit into the thread, so as to unscrew the tube when a new wick is to be put in; or it may be made with this tube soldered into the bar, B; D is the cap, or cover, it is made to screw on to the neck of the lamp. C is a brass tube soldered into the cap, it is a little wider than the tube A, and is made to slip snugly over it. When the cap has to be removed to fill up the lamp with fluid, it will easily be perceived that by slipping up the cover, the tube, C, will put out the light; this will prevent the filling up the lamp when ignited with fluid.

Fig. 2.



It is well known that camphene gives a most beautiful light, and that it is far more cleanly than oil or candles, and is generally preferred on every account, excepting the danger arising from its use in the common fluid lamps. This danger is entirely obviated by Dr. Stewart, in this his patent lamp. The way to use such lamps is to have a pair—never to use only one, so that when one is filling the other can be burning. The sale of this lamp has at once become extensive, and the patent is valuable because its use will be universal.

More information about rights, &c., will be obtained by letter addressed to Dr. F. Stewart, Seventh street, below Chestnut, Phila.

Improvement in the Method of Mounting Teeth.

For several years past a few dentists among our acquaintance have been in the practice of soldering their artificial teeth, for entire lower sets, to the gold plates with pure tin, using the tinman's soldering iron instead of the blowpipe. The manner of proceeding is as follows:

First strike up, in the usual manner, a very thin gold plate (No. 30 or 31, will answer) to fit the jaw. When this is done, place the wax upon it and cut it to the right curve and the proper height for the length of the teeth. The teeth are then to be selected and put round upon the wax in the proper position for use; but it does not matter whether, or not, they come down to the plate, provided all that part of them which is exposed to view, when in the mouth, is right, as all below will be filled with tin when the process is completed. Plaster and sand is now to be put on the outside of the teeth and plate, in the same manner as though they were to be soldered in the usual way. When this is done the wax may be cut away, the teeth removed from the plaster and a thin gold back put upon them. In backing them it will be necessary to bend the platina wires together, over the gold, with a common pair of pliers. The backs may now be soldered to the plate, forming one solid mass of tin as high as the wires, and imitating as nearly as possible the form of alveolus which has been absorbed. When this is done the plaster may be taken away and as much tin put upon the front as will restore what has been lost by absorption of gum and alveolar process.

When the piece is properly trimmed and burnished it makes a very strong and natural set of teeth, while the additional weight given to it by the tin keeps it in place better than those made in the ordinary way. Some use silver plate instead of gold and gild the whole by the galvanic process, and we can see no reason why this metal should not answer just as well as gold. We have put in several temporary sets in the above manner, on gold and all have done remarkably well, giving entire satisfaction. This plan of mounting teeth was first practiced, we believe, by Mr. Royce, about eight years since and has been used by him in very many cases, as he alleges, with perfect success.

Mr. George E. Hawes has lately made an improvement upon the above plan by means of which he dispenses with all metalic castings and plates of every kind, using only the pure tin and the teeth. His plan is, after the first cast is procured, which should be made of plaster with a large proportion of sand, to fit to it a piece of tin foil, or plate, as thick as can well be rubbed down to it with a burnisher, and as large as a gold plate would have to be. The wax is then put upon this tin plate and trimmed to the proper curve and height as in ordinary practice. Next, the teeth are to be placed upon the wax and when properly arranged, a strip of wax is put round the bottom of the front side of the teeth and plate. This wax, and that on the backs of the teeth, is then to be carved to represent the natural gums, or so as to form a smooth ridge as high as is desirable. Care must be taken to select such teeth as have their platina pins low, so that they may remain embedded in the wax.

When this process is completed, the whole is to be placed upon the plaster and sand cast, and more plaster and sand peured over it so as to cover with a thick mass the whole of the wax and the teeth. After the plaster has thoroughly hardened, the casts may be parted, and the tin plate and all the wax taken away, and the platina wires, and those parts of the teeth exposed, washed with muriate of zinc. A hole to pour the melted tin into, must now be made at one end of the set and another on the other side for the air to escape from. When completed thus far it is ready for the pouring, and to insure perfect success, the castings should be securely bound together and the whole mass heated to the temperature of melted tin.

Sets of teeth made in this way and having the castings thoroughly gilded, are much handsomer and more natural in their form than those which have the long teeth and gold backs, they are also stronger, as they are protected both front and back, can be made for one half the expense of the ordinary sets on heavy gold plates, and, judging from the little experience which we have had in making and testing them, as well as the testimony of Mr. Hawes, are equal in every respect, if not superior to those mounted upon gold backs.

[The above is from the last number of the Dental Recorder, a most excellent periodical edited by C. C. Allen, M. D., this city.]

LITERARY NOTICES.

Holden's Dollar Magazine, for October, contains an illustration of the "Suspension Bridge at Niagara River," "The Wife and Child of Osceola," "Old Newgate Prison," and "The Monument to Admiral Penn." The matter is entirely original and embraces some fine productions. We heartily commend this cheap publication to the patronage of the community. Messrs. Fowler & Deitz, publishers, 109 Nassau st.

Graham's American Magazine, October number, contains a beautiful line and stipple engraving of "The Slave of the Pacha," also "The Paris Fashions," "The Way to Church," a rural scene,—and some wood engravings of merit. The contents are as usual, choice and entertaining. Dewitt & Davenport, agents. They have, also, Peterson's Ladies' National Magazine, which is a very fine publication both in matter and embellishments. The terms of these magazines are $2per annum

The Family Messenger and Gleaner, published by A. B. Hamilton, Philadelphia, at $1. This highly interesting literary newspaper is about to enter upon a new volume. Our friends will find this an excellent family paper.

Arthur's Home Gazette seems to be rapidly rising into popular favor. T. S. Arthur, the Editor, is too well known to the reading community to require our eulogy.

"The Literati:"—Some honest opinions about Autorial merits and demerits, with occasional words of personality, together with Suggestions and Essays, by Edgar A. Poo: published by J. S. Redfield.—This is the third volume of Poe's works issued by the same publisher since the author's death, and is put forth in good style. The work, as the title indicates, is devoted to a review of the present-day authors, to the number of about seventy-five, and form a very readable book.

Shakspeare's Dramatic Works, Phillips, Sampson, & Co., publishers, Boston; Dewitt & Davenport, New York, Agents.—This number contains the Third Part of King Henry VI., embellished with an engraving of Lady Grey.

NEW PROSPECTUS OF THE

SCIENTIFIC AMERICAN.

TO MECHANICS, INVENTORS, AND MANUFACTURERS.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the Sixth Volume of this valuable journal, commenced on the 21st of September, offering a favorable opportunity for all to subscribe who take an interest in the progress and developement of the Mechanics' Arts and Manufactures of our country. The character of the Scientific American is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America.

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It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "*AMERICAN REPERTORY OF INVENTIONS*."

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10 copies for 6 mos., $8 | 15 copies for 12 mos., $22
10 " 12 " $15 | 20 " 12 " $28

Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value.

PREMIUM.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—now in press, to be ready about the 1st of October. It will be one of the most complete works upon the subject ever issued, and will contain about ninety engravings

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